NHSN SSI and CAUTI Training

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Objectives

- Review requirements for SSI reporting to CMS through NHSN
- Understand key terms and NHSN definitions for SSI and CAUTI
- Determine what procedure codes fall into NHSN SSI classification groups (Hysterectomy & Colon)
- Identify what data elements are needed to complete data entry
- Apply definitions using case studies

Hospital Value Based Purchasing, HAIs, and Patient Protection and Affordable Care Act - 2010

TITLE III—IMPROVING THE QUALITY AND EFFICIENCY OF HEALTH CARE

Subtitle A—Transforming the Health Care Delivery System

PART I—LINKING PAYMENT TO QUALITY OUTCOMES UNDER THE MEDICARE PROGRAM

SEC. 3001. HOSPITAL VALUE-BASED PURCHASING PROGRAM.

(a) PROGRAM.—

(1) IN GENERAL.—Section 1886 of the Social Security Act (42 U.S.C. 1395ww), as amended by section 4101(a) of the HITECH Act (Public Law 111–5), is amended by adding at the end the following new subsection:

"(o) HOSPITAL VALUE-BASED PURCHASING PROGRAM.—

"(2) MEASURES.—

"(A) IN GENERAL.—The Secretary shall select measures for purposes of the Program. Such measures shall be selected from the measures specified under subsection (b)(3)(B)(viii).

"(B) REQUIREMENTS.—

"(i) FOR FISCAL YEAR 2013.—For value-based incentive payments made with respect to discharges occurring during fiscal year 2013, the Secretary shall ensure the following:

"(I) CONDITIONS OR PROCEDURES.—Measures are selected under subparagraph (A) that cover at least the following 5 specific conditions or procedures:

"(aa) Acute myocardial infarction (AMI).

"(bb) Heart failure.

"(cc) Pneumonia.

"(dd) Surgeries, as measured by the Surgical Care Improvement Project (formerly referred to as 'Surgical Infection Prevention' for discharges occurring before July 2006).

"(ee) Healthcare-associated infections, as measured by the prevention metrics and targets established in the HHS Action Plan to Prevent Healthcare-Associated Infections (or any successor plan) of the Department of Health and Human Services.

"(II) HCAHPS.—Measures selected under subparagraph (A) shall be related to the Hospital

Healthcare-associated infections reporting is included in Section 3001- Hospital Value Based Purchasing Program

Defining Terms

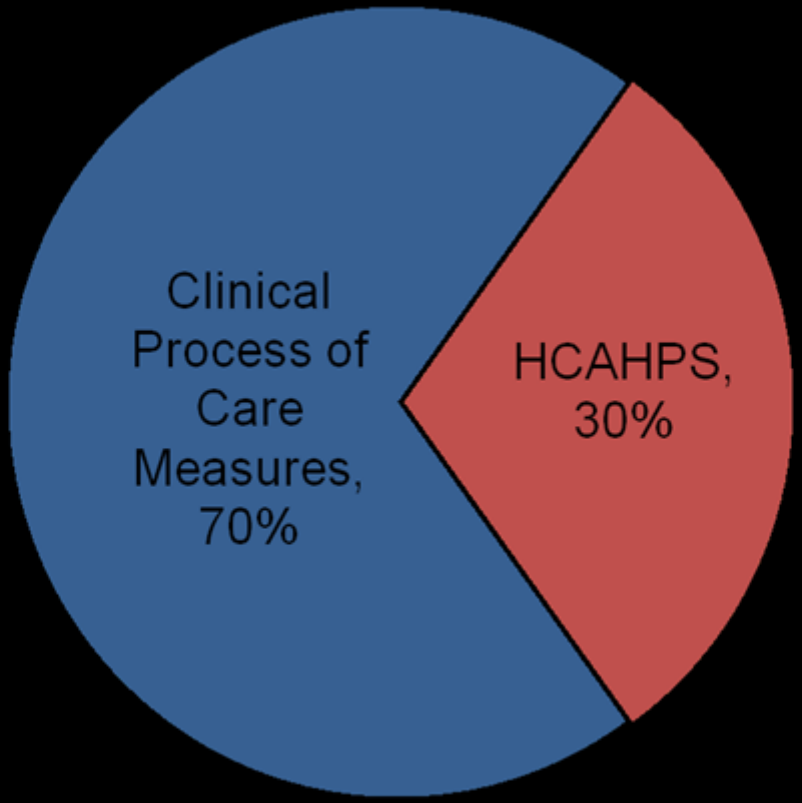
- **Pay for Reporting: Financially rewarding practitioners of healthcare facilities for collecting and submitting performance data to a quality measurement program.**

- **Pay for Performance: Financially rewarding practitioners or healthcare facilities for scoring well on performance measurements.**

Value-based Purchasing

17 Quality Measures for 2013

Other adverse events, including HAIs will be added in 2014



1. Nurse Communication
2. Doctor Communication
3. Hospital Staff Responsiveness
4. Pain Management
5. Medicine Communication
6. Hospital Cleanliness & Quietness
7. Discharge Information
8. Overall Hospital Rating

National Initiative
HHS Action Plan – 5 Year Targets

HHS Action Plan Metrics – Appendix G

	Infection or care process	System	Metric
1	Central line-associated bloodstream infection	NHSN	Standardized infection ratio
2	Adherence to central line insertion practices	NHSN	Percentage adherence
3a	Hospitalizations with *Clostridium difficile*	Hospital discharge data	Hospitalizations per 1000 patient discharges
5a	Methicillin resistant *Staphylococcus aureus*	Emerging Infections Program	Incidence rate
7	Adherence to Surgical Care Improvement Program	QualityNet	Percentage adherence

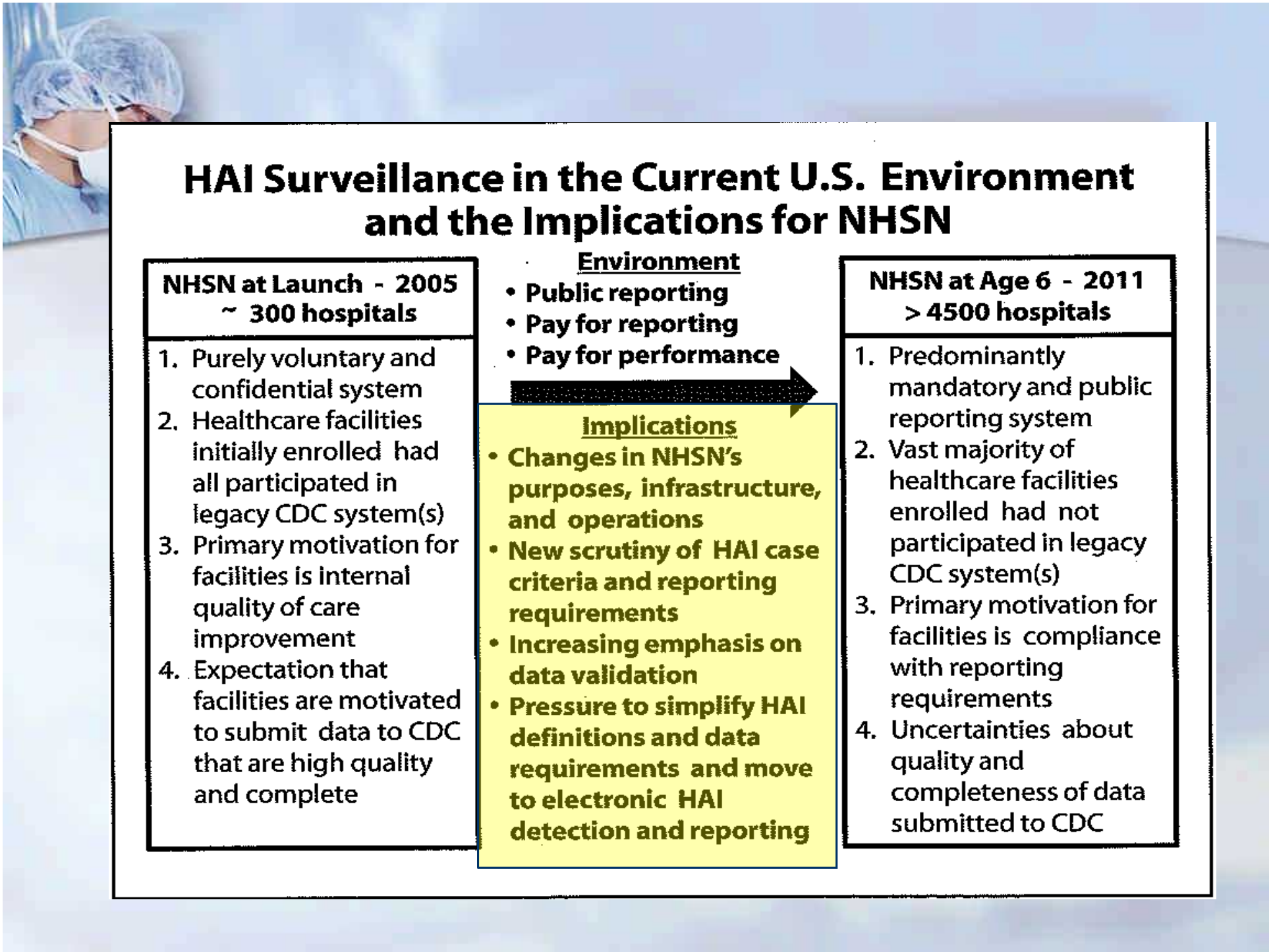
CMS Reporting Requirements 2012

Healthcare Facility HAI Reporting to CMS via NHSN – Current and Proposed Requirements (11/14/2011)

HAI Event	Facility Type	Start Date
CLABSI	Acute Care Hospitals Adult, Pediatric, and Neonatal ICUs	January 2011
CAUTI	Acute Care Hospitals Adult and Pediatric ICUs	January 2012
SSI	Acute Care Hospitals Colon and abdominal hysterectomy procedures	January 2012
I.V. antimicrobial start	Dialysis Facilities	January 2012
Positive blood culture	Dialysis Facilities	January 2012
Signs of vascular access infection	Dialysis Facilities	January 2012
CAUTI	Inpatient Rehabilitation Facilities	October 2012
CLABSI	Long Term Care Hospitals	October 2012
CAUTI	Long Term Care Hospitals	October 2012
MRSA Bacteremia	Acute Care Hospitals Facility-wide	January 2013
C. difficile LabID Event	Acute Care Hospitals Facility-wide	January 2013
HCW Influenza Vaccination	Acute Care Hospitals OP Surgery, ASCs	January 2013 October 2014
SSI *(future proposed)*	Outpatient Surgery/ASCs	January 2014

NHSN

- Web-based system launched by CDC in 2005 for surveillance of HAIs, other adverse events, and prevention practices
- System is comprised of 3 components/modules:
  - Patient Safety
  - Healthcare Personnel Safety
  - Biovigilance
- Primary users are healthcare facilities, prevention collaboratives, and state & federal agencies
- Technical design enables manual data entry or electronic reporting
- Mandatory reporting accounts for rapid growth in participation from 300 hospitals to over 4,900 hospitals in 2011

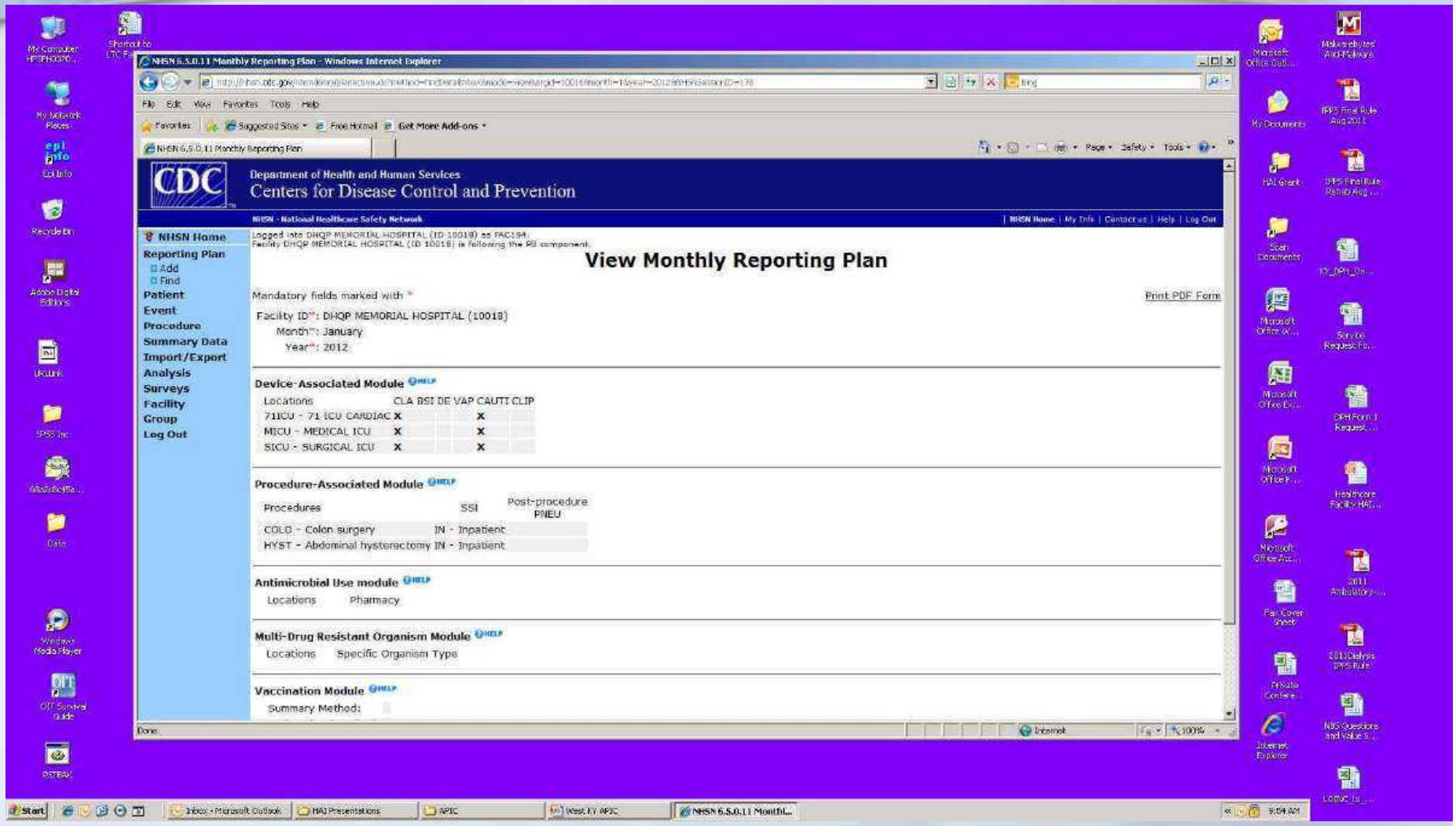

HAI Surveillance in the Current U.S. Environment and the Implications for NHSN
NHSN at Launch - 2005
~ 300 hospitals
1. Purely voluntary and confidential system
2. Healthcare facilities initially enrolled had all participated in legacy CDC system(s)
3. Primary motivation for facilities is internal quality of care improvement
4. Expectation that facilities are motivated to submit data to CDC that are high quality and complete
Environment
• Public reporting
• Pay for reporting
• Pay for performance
Implications
• Changes in NHSN's purposes, infrastructure, and operations
• New scrutiny of HAI case criteria and reporting requirements
• Increasing emphasis on data validation
• Pressure to simplify HAI definitions and data requirements and move to electronic HAI detection and reporting
NHSN at Age 6 - 2011
> 4500 hospitals
1. Predominantly mandatory and public reporting system
2. Vast majority of healthcare facilities enrolled had not participated in legacy CDC system(s)
3. Primary motivation for facilities is compliance with reporting requirements
4. Uncertainties about quality and completeness of data submitted to CDC

Surgical Site Infection (SSI)

NHSN and CMS

- Colon and Abdominal Hysterectomy must be included in your monthly reporting plans starting January 2012
- Must follow the NHSN protocol/definitions exactly
  - Report each SSI detected or indicate no infections occurred
  - Report each COLO and HYST performed on <u>inpatients only</u> for CMS

Monthly Reporting Plan



SSI Codes

When an NHSN operative procedure is selected for monitoring, **all** the procedures within that category must be followed

Legacy Code			ICD-9-CM Codes
COLO		anastomosis of the intestine; includes large-to-small and small-to-large bowel anastomosis; does not include rectal operations	17.31-17.36, 17.39, 45.03, 45.26, 45.41, 45.49, 45.52, 45.71-45.76, 45.79, 45.81-45.83, 45.92-45.95, 46.03, 46.04, 46.10, 46.11, 46.13, 46.14, 46.43, 46.52, 46.75, 46.76, 46.94
HYST	Abdominal hysterectomy	Abdominal approach with uterine removal	68.31, 68.39, 68.41, 68.49, 68.61, 68.69

http://www.cdc.gov/nhsn/PDFs/pscManual/9pscSSIcurrent.pdf

Key Term: NHSN Operative Procedure

- **A procedure that:**
  - **Is performed on a patient who is an NHSN inpatient or an outpatient**
  - **Takes place during an operation where a surgeon makes a skin or mucus membrane incision (including a laparoscopic approach) and <u>primarily</u> closes the incision before the patient leaves the operating room, and**

Skin to Skin

No wicks, drains coming out of <u>incision line</u> or small section left open

  - **Is represented by an NHSN procedure code**

Key term: NHSN Inpatient

- A patient whose date of admission to a healthcare facility and the date of discharge are *different* calendar days

An outpatient therefore, is a patient whose admission date and discharge date are the same day.

Key Term: Operating Room

- A patient care area that meets the Facilities Guidelines Institute (FGI) or American Institute of Architects' (AIA) criteria for an operating room when it was constructed or renovated.

  May include:
  - Traditional operating room
  - C-section room
  - Cardiac cath lab
  - Interventional radiology room

Key Terms: Wound Class

- **Clean (I)**
  - Uninfected wound, no inflammation; respiratory, alimentary, genital, or uninfected urinary tracts not entered; primarily closed; closed drainage, if needed
- **Clean contaminated (II)**
  - Respiratory, alimentary, genital, or urinary tracts entered under controlled conditions and without unusual contamination; include operations on biliary tract, appendix, vagina, oropharynx

Key Terms: Wound Class

- **Contaminated (III)**
  - Open, fresh, accidental wounds; major breaks in sterile technique or gross spillage from GI tract; includes incisions into acute, nonpurulent inflamed tissues

- **Dirty / Infected (IV)**
  - Old traumatic wounds with retained devitalized tissue and those that involve existing clinical infection or perforated viscera

Wound Class Cases

Case	Wound Class
Susanne underwent an appendectomy following 2 days of acute abdominal pain with rebound tenderness. At the end of the case, the surgeon indicates that the appendix had ruptured and the surgical area was irrigated and Cefoxitin was ordered for 3 days post-op.	III (3)
Fred had a cholecystectomy using a laparoscopic technique. The gallbladder was removed successfully with no breaks in operative asepsis.	II (2)
George had a KPRO revision. When the surgeon makes the incision into the surgical site, she notes that the knee joint demonstrates purulent matter and inflammation. A specimen is obtained and sent to the lab which grows *S. aures.*	IV (4)

Key Terms: ASA Class

ASA* Class

1 = Normally healthy patient

2 = Patient with mild systemic disease

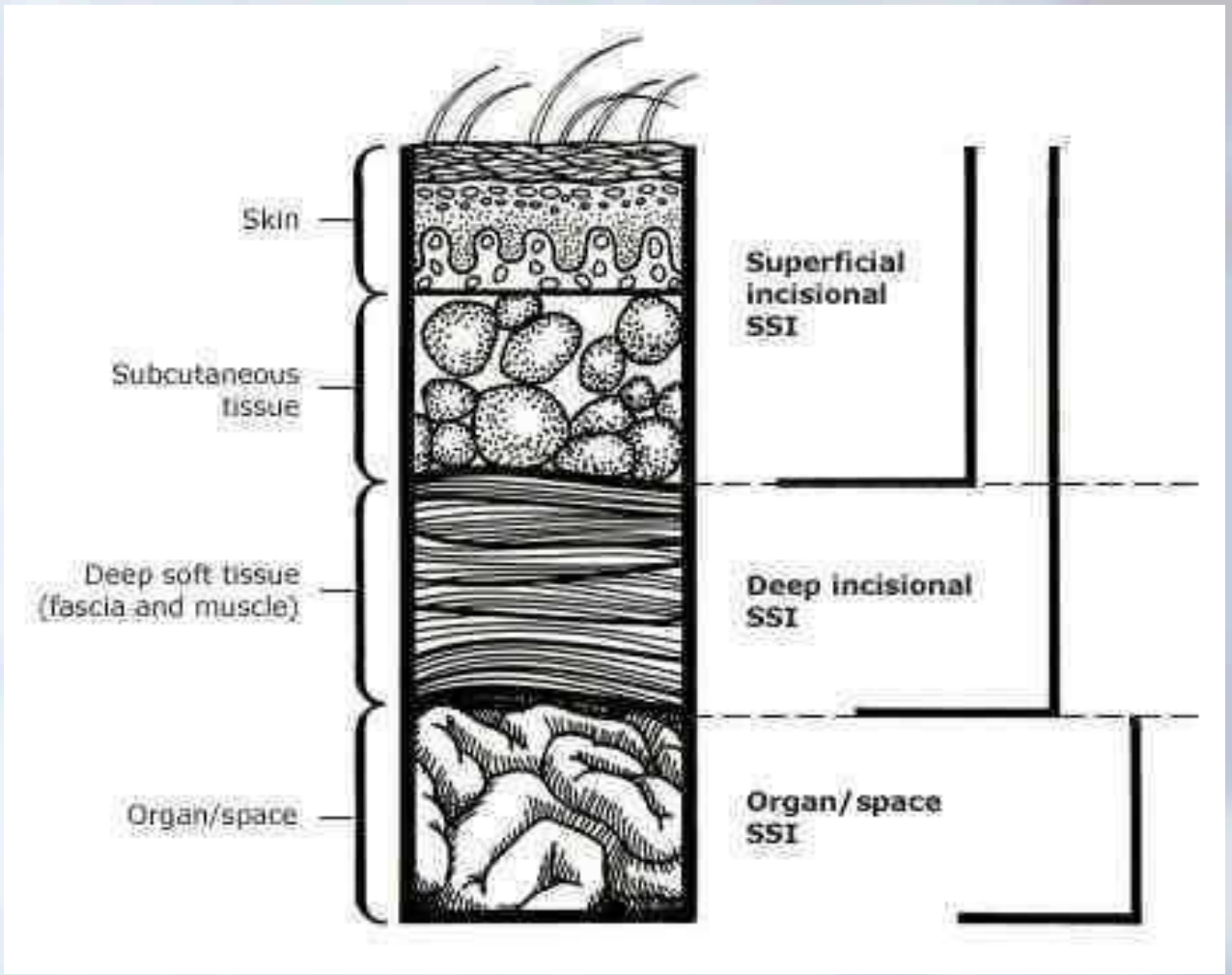
3 = Patient with severe systemic disease that is not incapacitating

4 = Patient with an incapacitating systemic disease that is a constant threat to life

5 = Moribund patient not expected to survive for 24 hours with or without operation

*American Society of Anesthesiologists

SSI Definitions



Definition: Superficial SSI

A **superficial incisional SSI** must meet one of the following criteria:

Infection occurs within 30 days after the operative procedure
and
involves only skin and subcutaneous tissue of the incision
and
patient has at least one of the following:

a. purulent drainage from the superficial incision.
b. organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial incision.
c. at least one of the following signs or symptoms of infection: pain or tenderness, localized swelling, redness, or heat, and superficial incision is deliberately opened by surgeon, and is culture-positive or not cultured. A culture-negative finding does not meet this criterion.
d. diagnosis of superficial incisional SSI by the surgeon or attending physician.

Superficial SSI

NOTE: There are two specific types of superficial incisional SSIs:

1. Superficial Incisional Primary (SIP) – a superficial incisional SSI that is identified in the primary incision in a patient that has had an operation with one or more incisions (e.g., C-section incision or chest incision for CBGB)
2. Superficial Incisional Secondary (SIS) – a superficial incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (e.g., donor site [leg] incision for CBGB)

Superficial SSI

REPORTING INSTRUCTIONS:

- Do not report a stitch abscess (minimal inflammation and discharge confined to the points of suture penetration) as an infection.
- Do not report a localized stab wound infection as SSI. While it would be considered either a skin (SKIN) or soft tissue (ST) infection, depending on its depth, it is not reportable under this module.
- "Cellulitis", by itself, does not meet the criteria for Superficial Incisional SSI.
- If the incisional site infection involves or extends into the fascial and muscle layers, report as a deep-incisional SSI.
- Classify infection that involves both superficial and deep incision sites as deep incisional SSI.
- An infected circumcision site in newborns is classified as CIRC. Circumcision is not an NHSN operative procedure. CIRC is not reportable under this module.
- An infected burn wound is classified as BURN and is not reportable under this module

Deep Incisional SSI

A **deep incisional SSI** must meet one of the following criteria:
Infection occurs within 30 days after the operative procedure if no implant is left in place or within one year if implant is in place and the infection appears to be related to the operative procedure
and
involves deep soft tissues (e.g., fascial and muscle layers) of the incision
and
patient has at least one of the following:

a. purulent drainage from the deep incision but not from the organ/space component of the surgical site
b. a deep incision spontaneously dehisces or is deliberately opened by a surgeon and is culture-positive or not cultured and the patient has at least one of the following signs or symptoms: fever (>38°C), or localized pain or tenderness. A culture-negative finding does not meet this criterion.
c. an abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination
d. diagnosis of a deep incisional SSI by a surgeon or attending physician.

Deep Incisional SSI

NOTE: There are two specific types of deep incisional SSIs:

1. Deep Incisional Primary (DIP) – a deep incisional SSI that is identified in a primary incision in a patient that has had an operation with one or more incisions (e.g., C-section incision or chest incision for CBGB)
2. Deep Incisional Secondary (DIS) – a deep incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (e.g., donor site [leg] incision for CBGB)

REPORTING INSTRUCTIONS:

- Classify infection that involves both superficial and deep incision sites as deep incisional SSI.

Organ Space SSI

An **organ/space SSI** must meet one of the following criteria:
Infection occurs within 30 days after the operative procedure if no implant is left in place or within one year if implant is in place and the infection appears to be related to the operative procedure
and
infection involves any part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure
and
patient has at least one of the following:

a. purulent drainage from a drain that is placed through a stab wound into the organ/space
b. organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space
c. an abscess or other evidence of infection involving the organ/space that is found on direct examination, during reoperation, or by histopathologic or radiologic examination
d. diagnosis of an organ/space SSI by a surgeon or attending physician.

Organ Space SSI

REPORTING INSTRUCTIONS:

- Occasionally an organ/space infection drains through the incision. Such infection generally does not involve reoperation and is considered a complication of the incision. Therefore, classify it as a deep incisional SSI.
- Report mediastinitis following cardiac surgery that is accompanied by osteomyelitis as SSI-MED rather than SSI-BONE.
- If meningitis (MEN) and a brain abscess (IC) are present together after operation, report as SSI-IC.
- Report CSF shunt infection as SSI-MEN if it occurs $\leq$ 1 year of placement; if later or after manipulation/access, it is considered CNS-MEN and is not reportable under this manual.
- Report spinal abscess with meningitis as SSI-MEN following spinal surgery.
- Episiotomy is not considered an operative procedure in NHSN.

Organ Space SSI

Table 2. Specific sites of an organ/space SSI. Criteria for these sites can be found in the NHSN Help System (must be logged in to NHSN) or Chapter 17.

Code	Site	Code	Site
BONE	Osteomyelitis	JNT	Joint or bursa
BRST	Breast abscess or mastitis	LUNG	Other infections of the respiratory tract
CARD	Myocarditis or pericarditis	MED	Mediastinitis
DISC	Disc space	MEN	Meningitis or ventriculitis
EAR	Ear, mastoid	ORAL	Oral cavity (mouth, tongue, or gums)
EMET	Endometritis	OREP	Other infections of the male or female reproductive tract
ENDO	Endocarditis	OUTI	Other infections of the urinary tract
EYE	Eye, other than conjunctivitis	SA	Spinal abscess without meningitis
GIT	GI tract	SINU	Sinusitis
HEP	Hepatitis	UR	Upper respiratory tract
IAB	Intraabdominal, not specified else-where	VASC	Arterial or venous infection
IC	Intracranial, brain abscess or dura	VCUF	Vaginal cuff

Additional SSI info

NOTES:

1. If a patient has several NHSN operative procedures prior to an infection, report the operative procedure code of the operation that was performed most closely in time prior to the infection date, unless there is evidence that the infection is associated with a different operation.
2. If a procedure from more than one NHSN operative procedure category was done through a single incision, attempt to determine the procedure that is thought to be associated with the infection. If it is not clear (as is often the case when the infection is a superficial incisional SSI), or if the infection site being reported is not an SSI, use the NHSN Principal Operative Procedure Category Selection Lists (Table 3) to select which operative procedure to report.

Additional SSI info

Table 3. NHSN Principal Operative Procedure Category Selection Lists

The following lists are derived from Table 1, NHSN Operative Procedure Categories. The operative procedures with the highest risk of surgical site infection are listed before those with a lower risk.

Priority	Code	Abdominal Operations
1	SB	Small bowel surgery
2	KTP	Kidney transplant
3	LTP	Liver transplant
4	BILI	Bile duct, liver or pancreatic surgery
5	REC	Rectal surgery
6	COLO	Colon surgery
7	GAST	Gastric surgery
8	CSEC	Cesarean section
9	SPLE	Spleen surgery
10	APPY	Appendix surgery
11	HYST	Abdominal hysterectomy
12	VHYS	Vaginal Hysterectomy
13	OVRY	Ovarian surgery
14	HER	Herniorrhaphy
15	CHOL	Gall bladder surgery
16	AAA	Abdominal aortic aneurysm repair
17	NEPH	Kidney surgery
18	XLAP	Laparotomy

Additional SSI info

If a patient goes to the OR more than once during the same admission and another procedure is performed through the same incision within 24 hours of the original operative incision, report only one procedure on the *Denominator for Procedure* (CDC 57.121) form combining the durations for both procedures. For example, a patient has a CBGB lasting 4 hours. He returns to the OR six hours later to correct a bleeding vessel. The surgeon reopens the initial incision, makes the repairs, and recloses in 1.5 hours. Record the operative procedure as one CBGB and the duration of operation as 5 hour 30 minutes. If the wound class has changed, report the higher wound class. If the ASA class has changed, report the higher ASA class.

Additional Rules about Duration

- **If more than one NHSN operative procedure is done through the same incision during the same trip to the OR, create a record (denominator procedure) for each if you are monitoring the two types in your monthly plan. You will use the total time for the duration for both.**

Example: Patient had a coronary artery bypass graft (CABG) and a mitral valve replacement (CARD). The time from the first incision until skin closure was 5 hours. A denominator procedure record is completed for the CABG and another for the CARD, indicating the duration as 5 hours and 0 minutes for each.

Additional Rules about Duration

- **Bilateral Procedures: two separate denominator procedure records are completed.**

- **To document the duration, indicate incision time to closure for each procedure separately (if documented in the OR record) or, alternatively, take the total time for both procedures and split it evenly between the two.**

Post Discharge Surveillance

- All facilities should have in-place a system to follow-up on all surgical patients for 30 days post-op.
  - Surgeon and/or patient surveys by mail or phone (easiest to train surgeon office staff to complete a tool)
  - Review of post-op clinic records

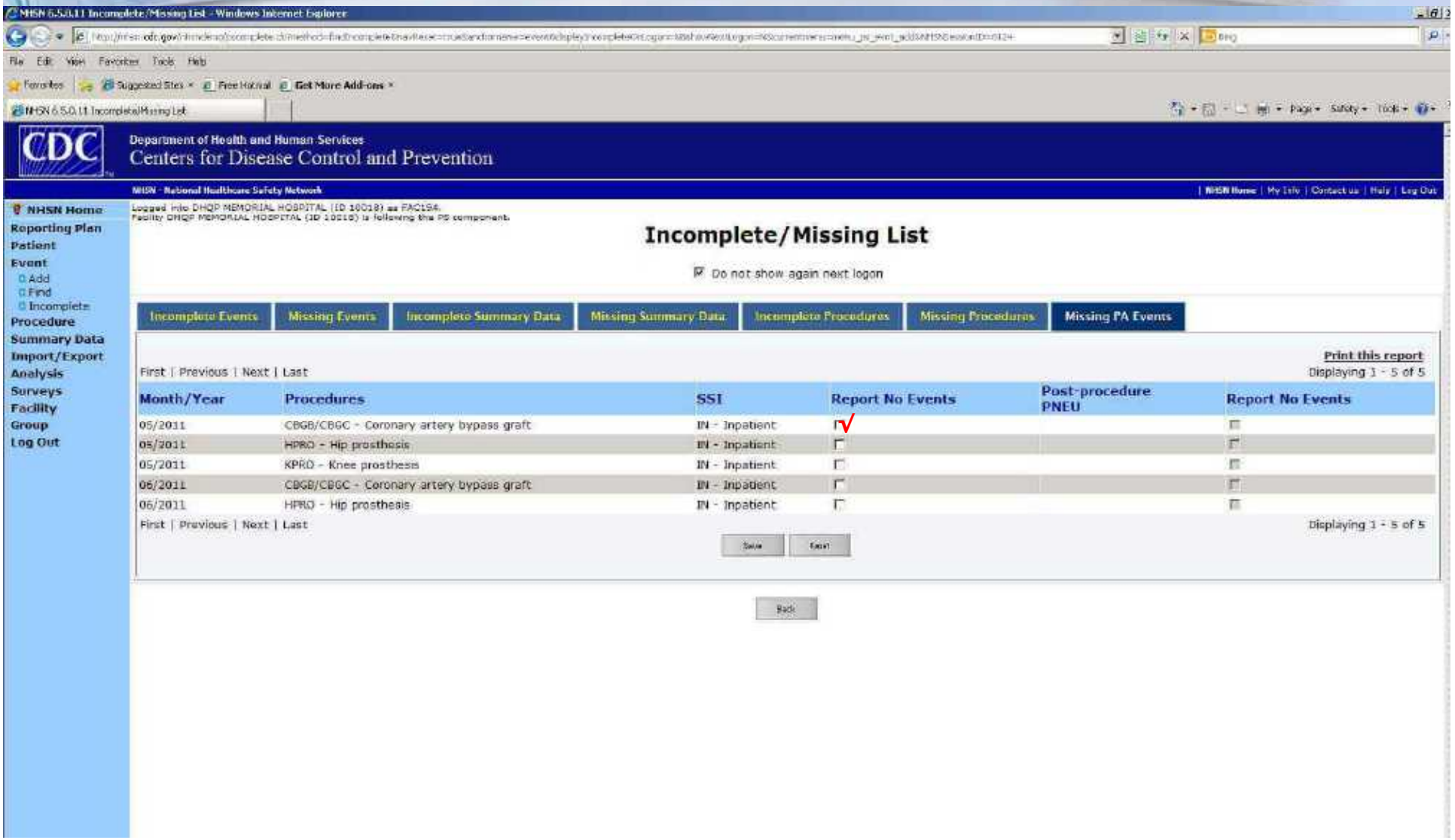
Can use re-admission coding, but this can not be only method

SSI NHSN Reporting

- Numerator (s) – those cases determined to be infected
  - Superficial
  - Deep
  - Organ space
- Denominator (s) – all the procedures completed during the same time frame

If no cases to Report

If no cases to Report



SSI Numerator Reporting

Enter COLO or HYST

If the SSI is an NHSN defined MDRO and you are using the MDRO module for surveillance then check yes. If you are not using the MDRO module, then select no.

Location of where the patient was 1st placed after the OR/PACU

NHSN Page 1 of 4

Surgical Site Infection (SSI)

OMB No. 0920-0666
Exp. Date: 05-31-2014

*required for saving **required for completion

Facility ID:	Event #:
*Patient ID:	Social Security #:
Secondary ID:	
Patient Name, Last:	First: Middle:
*Gender: F M Other	*Date of Birth:
Ethnicity (Specify):	Race (Specify):
*Event Type: SSI	*Date of Event:
*NHSN Procedure Code:	ICD-9-CM Procedure Code:
*Date of Procedure:	*Outpatient Procedure: Yes No

*MDRO Infection Surveillance:

☐ Yes, this infection's pathogen & location are in-plan for Infection Surveillance in the MDRO/CDI Module

☐ No, this infection's pathogen & location are **not** in-plan for Infection Surveillance in the MDRO/CDI Module

*Date Admitted to Facility:	Location:

Event Details

*Specific Event:

☐ Superficial Incisional Primary (SIP)
☐ Superficial Incisional Secondary (SIS)
☐ Organ/Space (specify site): _____
☐ Deep Incisional Primary (DIP)
☐ Deep Incisional Secondary (DIS)

*Specify Criteria Used (check all that apply):

Signs & Symptoms

☐ Purulent drainage or material
☐ Pain or tenderness
☐ Localized swelling
☐ Redness
☐ Heat
☐ Fever
☐ Incision deliberately opened by surgeon
☐ Wound spontaneously dehisces
☐ Abscess
☐ Hypothermia
☐ Apnea
☐ Bradycardia
☐ Lethargy
☐ Cough
☐ Nausea
☐ Vomiting
☐ Dysuria
☐ Other evidence of infection found on direct exam, during surgery, or by diagnostic tests[1]
☐ Other signs & symptoms[1]

Laboratory

☐ Positive culture
☐ Not cultured
☐ Positive blood culture
☐ Blood culture not done or no organisms detected in blood
☐ Positive Gram stain when culture is negative or not done
☐ Other positive laboratory tests[1]
☐ Radiographic evidence of infection

Clinical Diagnosis

☐ Physician diagnosis of this event type
☐ Physician institutes appropriate antimicrobial therapy[1]

[1]per organ/space specific site criteria

http://www.cdc.gov/nhsn/forms/Patient-Safety-forms.html

SSI Numerator Reporting

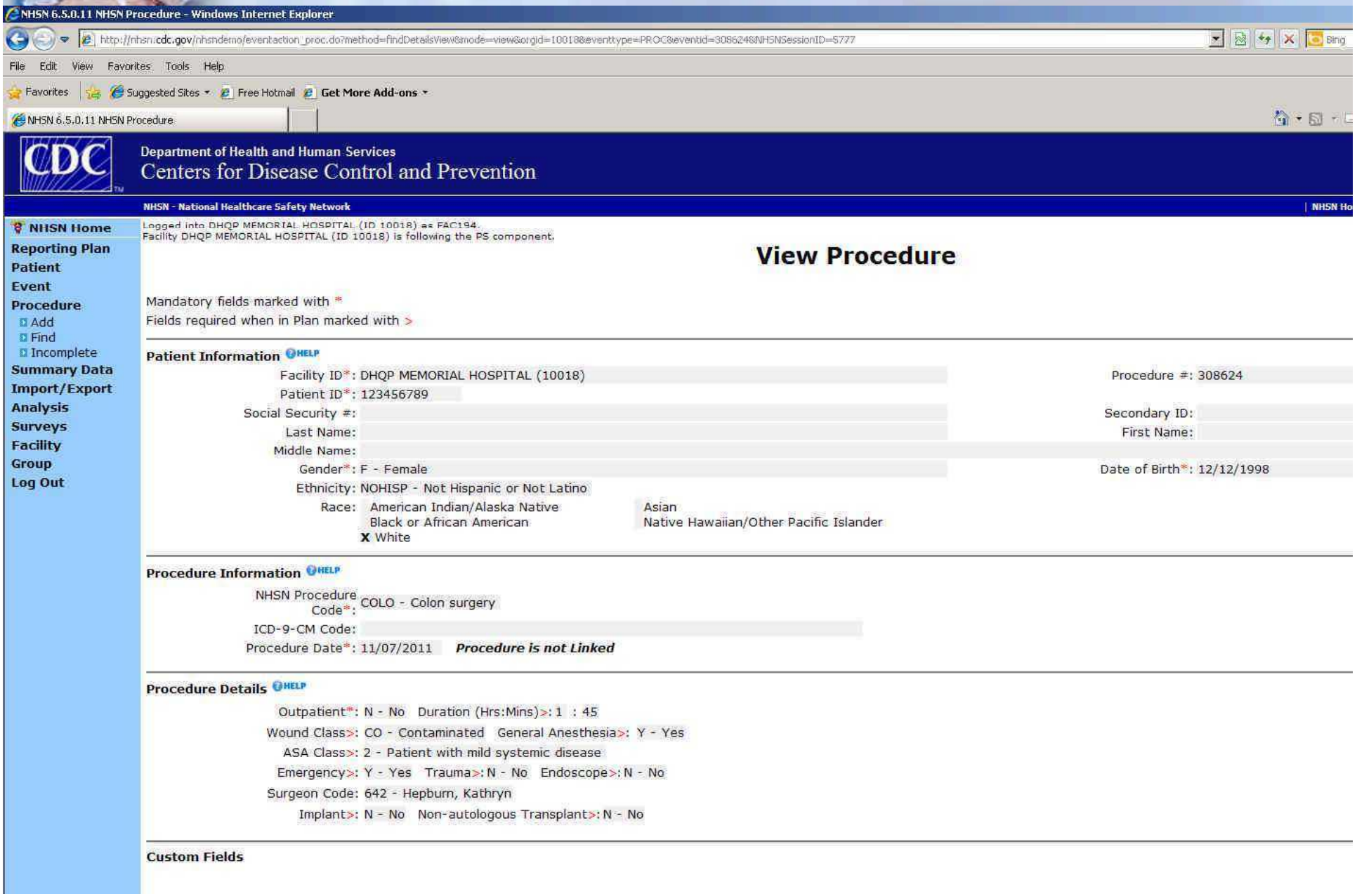
*Detected: ☐ A (During admission) ☐ P (Post-discharge surveillance) ☐ R (Readmission)			
*Secondary Bloodstream Infection: Yes No			
**Died: Yes No	SSI Contributed to Death: Yes	No	
Discharge Da	*Pathogens Identified: Yes	No	*If Yes, specify on pages 2-3.

If the patient had a culture confirmed bloodstream infection with a documented SSI and at least one organism from the blood culture and SSI match, then select yes.

Review chart/death note/certificate of death forms to determine if SSI caused the death or exacerbated an existing condition which led to death. If you are unsure, ask Surgeon, Infectious Disease or Medical Director.

Readmission Changed to :
RO = Other Facility
RF = Your Facility

Denominator Data



Denominator for Procedure

OMB No. 0920-0666
Exp. Date: 05-31-2014

* required for saving

Facility ID: | Procedure #:

*Patient ID: | Social Security #:

Secondary ID:

Patient Name, Last: First: Middle:

*Gender: F M | *Date of Birth:

Ethnicity (specify): | Race (specify):

Event Type: PROC | *NHSN Procedure Code:

*Date of Procedure: | ICD-9-CM Procedure Code:

Procedure Details

*Outpatient: Yes No | *Duration: _____Hours _____Minutes

*Wound Class: C CC CO D U | *General Anesthesia: Yes No

ASA Score: 1 2 3 4 5 *Emergency: Yes No

*Trauma: Yes No *Endoscope: Yes No

Surgeon Code:_____

*Implant: Yes No Non-autologous Transplant: Yes No

CSEC:

*Height: _____feet _____inches (choose one) _____meters

*Weight: _____lbs / kg (circle one)

*Estimated Blood Loss: _____ml

*Duration of Labor: _____hours

Circle one: FUSN RFUSN

*Spinal Level: (check one)

- ☐ Atlas-axis
- ☐ Atlas-axis/Cervical
- ☐ Cervical
- ☐ Cervical/Dorsal/Dorsolumbar
- ☐ Dorsal/Dorsolumbar
- ☐ Lumbar/Lumbosacral
- ☐ Not specified

*Diabetes Mellitus: Yes No

*Approach/Technique: (check one)

- ☐ Anterior
- ☐ Posterior
- ☐ Anterior and Posterior
- ☐ Lateral transverse
- ☐ Not specified

*HPRO: (check one)____Total Primary ____Partial Primary ____Total Revision ____Partial Revision

*KPRO: (check one)____Primary (Total) ____Revision (Total or Partial)

Custom Fields

Label		Label	
_____	___/___/____	_____	___/___/____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Comments

Record the hours and minutes between skin incision to skin closure, do not include OR in and out time which may include anesthesia time

Select yes if the procedure was a non-elective and unscheduled operation; otherwise select no

Being removed

Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with Sections 304, 306 and 308(d) of the Public Health Service Act (42 USC 242b, 242k, and 242m(d)).

Public reporting burden of this collection of information is estimated to average 8 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to CDC, Reports Clearance Officer, 1600 Clifton Rd., MS D-74, Atlanta, GA 30333, ATTN: PRA (0920-0666).

Denominator for Procedure

OMB No. 0920-0666
Exp. Date: 05-31-2014

* required for saving

Facility ID: | Procedure #:

*Patient ID: | Social Security #:

Secondary ID:

Patient Name, Last: First: Middle:

*Gender: F M | *Date of Birth:

Ethnicity (specify): | Race (specify):

Event Type: PROC | *NHSN Procedure Code:

*Date of Procedure: | ICD-9-CM Procedure Code:

Procedure Details

*Outpatient: Yes No | *Duration: _____Hours _____Minutes

*Wound Class: C CC CO D U | *General Anesthesia: Yes No

ASA Score: 1 2 3 4 5 *Emergency: Yes No

*Trauma: Yes No *Endoscope: Yes No

Surgeon Code:_____

*Implant: Yes No *Non-autologous Transfusion: Yes No

CSEC:

*Height: _____feet _____inches *Weight: _____ / kg *Duration of Labor: _____hours

(choose one) _____meters (circle one) *Estimated Blood Loss: _____ml

Circle one: FUSN RFUSN

*Diabetes Mellitus: Yes No

*Spinal Level: (check one)

- ☐ Atlas-axis
- ☐ Atlas-axis/Cervical
- ☐ Cervical
- ☐ Cervical/Dorsal/Dorsolumbar
- ☐ Dorsal/Dorsolumbar
- ☐ Lumbar/Lumbosacral
- ☐ Not specified

*Approach/Technique: (check one)

- ☐ Anterior
- ☐ Posterior
- ☐ Anterior and Posterior
- ☐ Lateral transverse
- ☐ Not specified

*HPRO: (check one)____Total Primary ____Partial Primary ____Total Revision ____Partial Revision

*KPRO: (check one)____Primary (Total) ____Revision (Total)

Custom Fields

Label		Label	
_____	___/___/____	_____	___/___/____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Comments

Wound Class and ASA Score should be in OR record

If more than one surgeon performed the surgery, enter the code for the surgeon who was primarily responsible for the case

If the entire procedure was performed using a laparoscope, select yes. Select no is incision was extended for hand assist or fully converted to open approach.

Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with Sections 304, 306 and 308(d) of the Public Health Service Act (42 USC 242b, 242k, and 242m(d)).

Public reporting burden of this collection of information is estimated to average 8 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to CDC, Reports Clearance Officer, 1600 Clifton Rd., MS D-74, Atlanta, GA 30333, ATTN: PRA (0920-0666).

Denominator for Procedure

OMB No. 0920-0666
Exp. Date: 05-31-2014

* required for saving

Facility ID:	Procedure #:
*Patient ID:	Social Security #:
Secondary ID:	
Patient Name, Last: First:	Middle:
*Gender: F M	*Date of Birth:
Ethnicity (specify):	Race (specify):
Event Type: PROC	*NHSN Procedure Code:
*Date of Procedure:	ICD-9-CM Procedure Code:

Procedure Details

*Outpatient: Yes No
*Wound Class: C CC CO D U
ASA Score: 1 2 3 4 5
*Trauma: Yes No
Surgeon Code:_____
*Implant: Yes No

*Duration: _____Hours _____Minutes
*General Anesthesia: Yes No
*Emergency: Yes No
*Endoscope: Yes No
Non-autologous Transplant: Yes No

CSEC:
*Height: _____feet _____inches
(choose one) _____meters
*Weight: _____lbs / kg
(circle one)
*Duration of Labor: _____hours
*Estimated Blood Loss: _____ml

Circle one: FUSN RFUSN

*Spinal Level: (check one)
- ☐ Atlas-axis
- ☐ Atlas-axis/Cervical
- ☐ Cervical
- ☐ Cervical/Dorsal/Dorsolumbar
- ☐ Dorsal/Dorsolumbar
- ☐ Lumbar/Lumbosacral
- ☐ Not specified

*Diabetes Mellitus: Yes No

*Approach/Technique: (check one)
- ☐ Anterior
- ☐ Posterior
- ☐ Anterior and Posterior
- ☐ Lateral transverse
- ☐ Not specified

To be deleted for C-sections

Implant is a nonhuman-derived object, material, or tissue that is placed in a patient during an Operative procedure. For surveillance purposes this object is considered an implant until it is manipulated for diagnostic or therapeutic purposes. (Will be in NEW release)

Non-absorbable sutures are excluded

*HPRO: (check one)____Total Primary ____Partial Primary ____Total Revision ____Partial Revision
*KPRO: (check one)____Primary (Total) ____Revision (Total or Partial)

Custom Fields

Label		Label	
_____	___/___/____	_____	___/___/____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Comments

Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with Sections 304, 306 and 308(d) of the Public Health Service Act (42 USC 242b, 242k, and 242m(d)).

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NHSN Training Site

http://nhsn.cdc.gov/nhsndemo

Usernames: FAC002-FAC102
Passwords: BAWIGL002-BAWIGL102

CDC - New Risk Factor Stratification (Risk Adjustment)

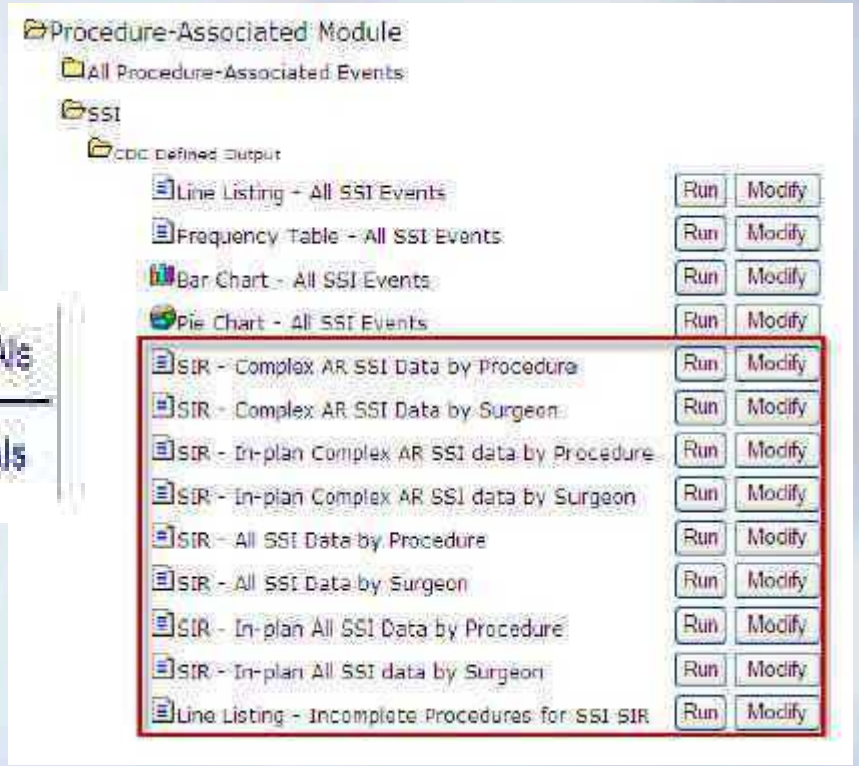
For All Procedures		
Wound class	General anesthesia	Age
ASA score	Emergency	Gender
Duration of procedure	Trauma	Endoscope
Bed size	Med School Affiliation	
For C-section		
Weight	Height	Duration of labor
Estimated blood loss		
For Spinal Fusion		
Spinal level	Diabetes Mellitus	Approach/Technique
For Hip/Knee prosthesis		
Total/ Partial	Primary/ Revision	

Risk Stratification with SIR

COLO	age, anesthesia, asa, duration, endoscope, medical school affiliation*, hospital bed size*, wound class

HYST	age, anesthesia, asa, duration, endoscope, hospital bed size*

$$SIR = \frac{\text{Observed (O) HAIs}}{\text{Expected (E) HAIs}}$$



SIR – Standardized Infection Ratio

- Based on Standardized Mortality Ratio (SMR)
  - Used extensively in public health research
- Compares the experience in one facility to that in a standard population (referent population)

 # Observed / # Expected

Quick and Dirty:

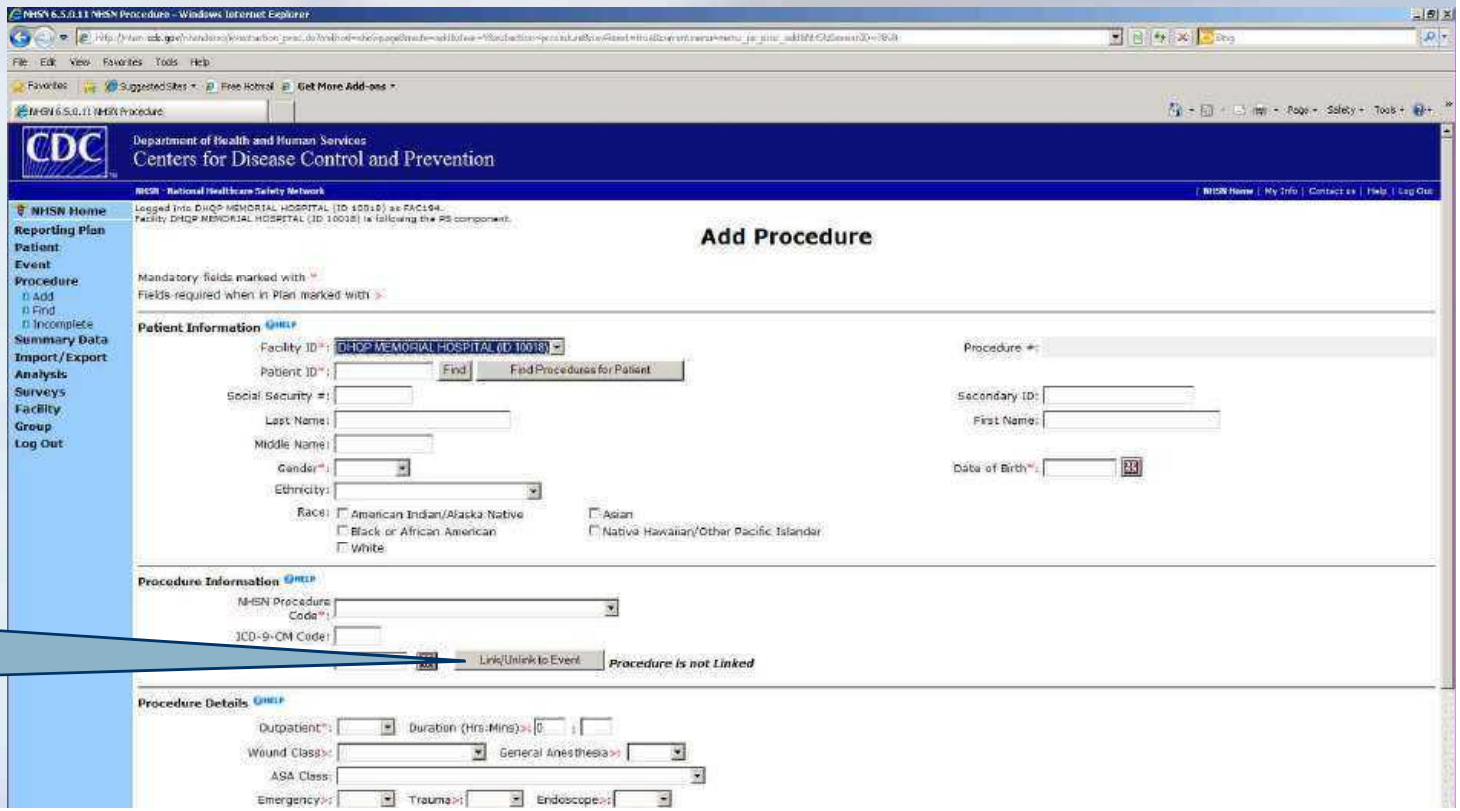
If the expected # of infections = # observed, the ratio will = ***1***

>1 = more infections than expected

<1 = fewer infections than expected

Importing SSI Denominators

- Linking procedure type and SSI records is important in order for the correct risk factor data/stratification to occur.

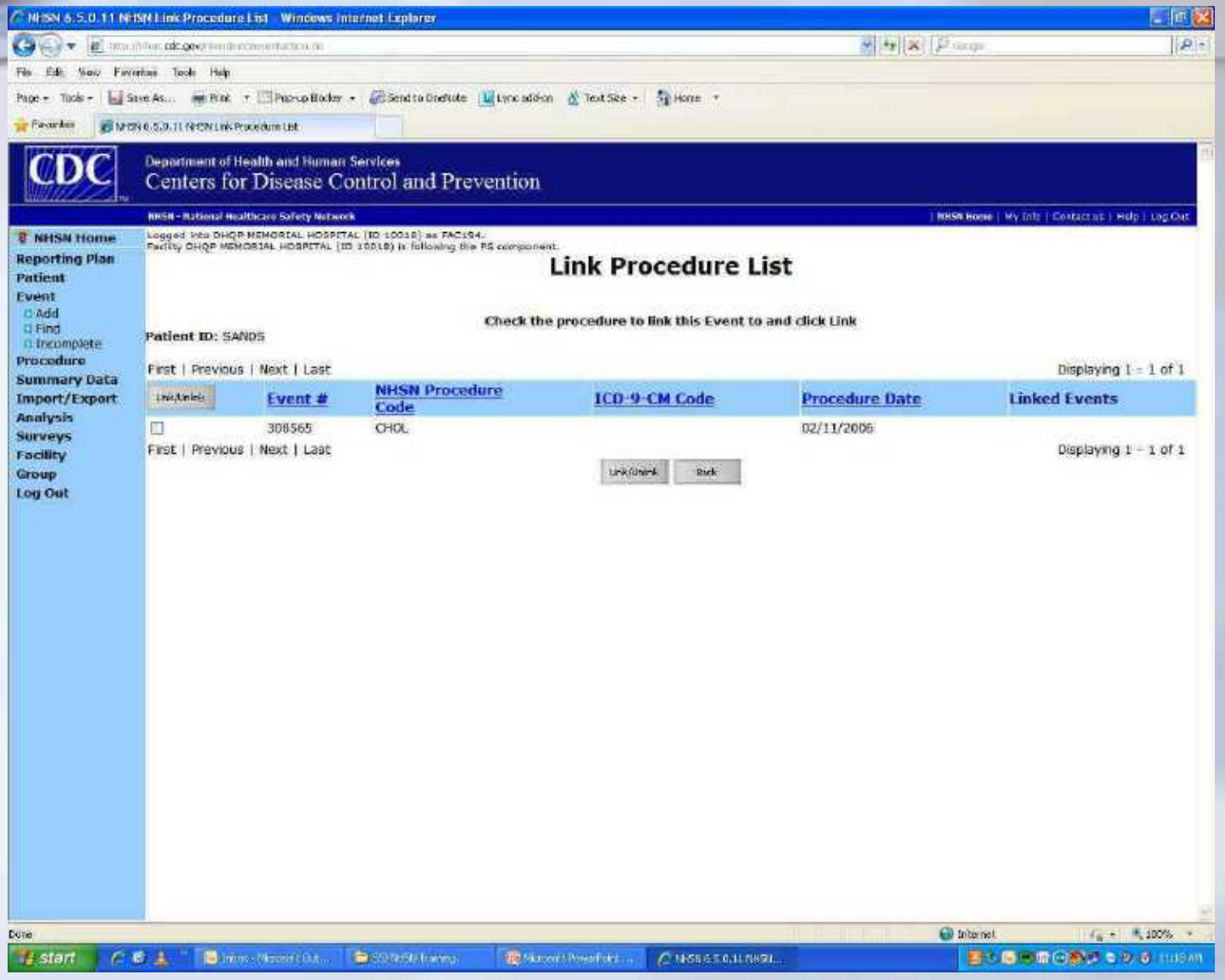


Link Procedures

Linking Records

- First enter Denominator for procedure
  - Manual or import
- Then enter SSI record
- Link the two records

Link Event to Procedure



Importing Procedures

- **Detailed instructions can be found on NHSN web-site**
- **IT staff or Decision Support staff will need to pull the data required**

- **CDC NHSN Resource Library**
  - Importing Patient Safety Procedure Data - Specifications for 2012 [PDF - 1.4 MB] Jan 2012
    The procedure import file specifications contained in this document will be implemented in NHSN version 6.6, planned for late January 2012.

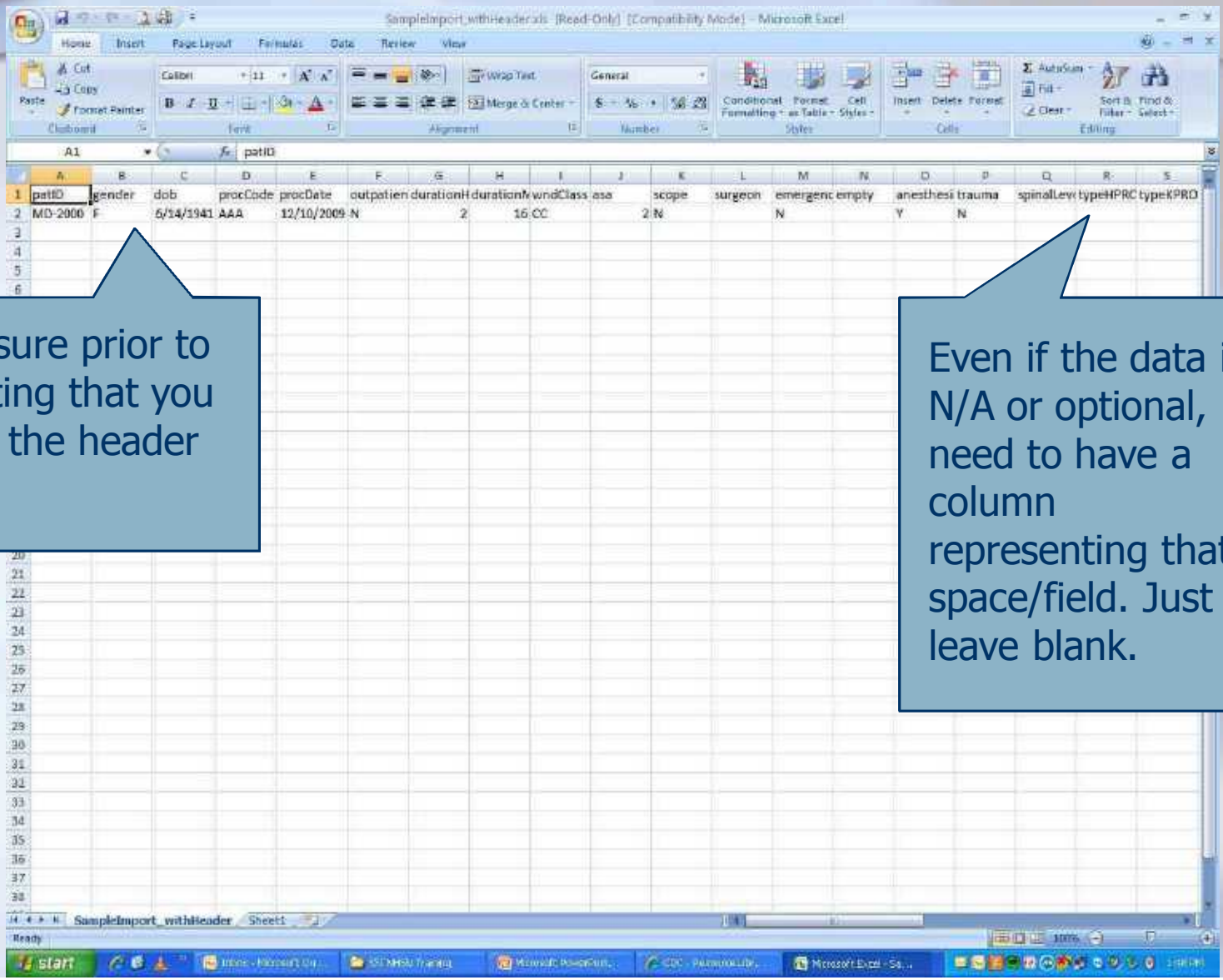
Importing Procedures

- Clinical Document Architecture (CDA) is a Health Level 7 (HL7) standard which provides framework for format of electronic documents. NHSN has been enabled to accept electronic infection reports, denominator data, and process of care data from commercial infection surveillance systems (check with your vendor).

CSV File Format

- **Custom fields and surgeons codes must be set-up in NHSN prior to importing these optional data.**
- **Data in the import file must be in same order described in specifications document. Includes leaving empty placeholders for optional fields that are not imported**
  - Many errors are the result of these fields being out of order

ASCII comma delimited .txt or .csvfile format



Make sure prior to importing that you delete the header row

Even if the data is N/A or optional, need to have a column representing that space/field. Just leave blank.

Import Data

Click "Browse" to search for and select the file to import. Once the file has been selected, click "Submit."

As the file is being submitted, a progress bar will appear; depending on the size of the file, it may take a few moments for the entire file to be submitted.

Importing

Inserts: This tab includes all procedure records that have passed the quality acceptance checks. These records can be imported without any additional editing.

Inserts | Duplicate Data | Bad Data

Delete		patid	gender	dob	proccode	procdate	outpatient	procdurationhr	procdurationmin	swclass	asa	endoscope	surgeon
☐	Edit	MD-5002	F	03/25/1962	KPRO	01/12/2009	Y	1	25	C	1	N	
☐	Edit	MD-5002	F	03/25/1962	KPRO	01/12/2009	Y	1	25	C	1	N	
☐	Edit	MD-5004	F	09/02/1976	CSEC	01/13/2009	N		35	C	1	N	
☐	Edit	MD-5005	F	04/29/1974	CSEC	01/13/2009	N		53	C	1	N	
☐	Edit	MD-5006	F	08/24/1982	CSEC	01/14/2009	N		44	C	1	N	
☐	Edit	MD-5008	M	10/17/1963	FUSN	01/22/2009	N	2	12	C	1	N	

Update | Delete | Back

NOTE: All other tabs must be resolved before any data can be imported.

Importing

Duplicate Data: The tab lists all procedure records in the import file that are considered duplicates. NOTE: You must either select one of the duplicate records, or delete both records from the import file before proceeding. If you select one of the duplicate records, as shown below, click "Transfer selected duplicate records for import."

Importing

Bad Data: This tab lists all procedure records in the import file that cannot be imported for one or more reasons. Beneath each record, details are provided that will assist you in fixing each record. NOTE: Each record in the Bad Data tab must either be fixed (click "Edit") or deleted in order to import your file.

Inserts | Bad Data

Delete		patid	gender	dob	proccode	procdate	outpatient	procdurationhr	procdurationmin	swclass	asa	endoscope	surgeon
☐	Edit	MD-5000	M	02/15/1944	COLO	01/12/2009	N	1	12	CC	6	N	
(asa is not valid.)													
☐	Edit	MD-5001	M	06/10/1952	HYST	01/12/2009	Y	2	3	CC	1	N	
(Procedure code and patient gender is not valid.)													
☐	Edit	MD-5003	M	07/11/1946	COLO	01/12/2009	N		94	CC	2	N	
(Procedure Duration (mins) is not in the range 0 through 59.)													
☐	Edit	MD-5007	F	06/12/1952	FUSN	01/15/2009	N	3	16	C	2	N	
(spinallevel is not valid.)													

Update | Delete | Back

This is part of NHSN's Internal Validation Process

Importing

Updates: This tab lists all procedure records that already exist in the NHSN database, but have updates in one or more columns. You can either choose to delete the new record, or choose one or more columns to update, as shown below.

Updates

Delete		patid	gender	dob	proccode	procdate	outpatient	procdurationhr	procdurationmin	swclass	asa
☐	Edit	MD-5000	M	02/15/1944	COLO	01/12/2009	N	1	23	CC	3
Old data		MD-5000	M	02/15/1944	COLO	01/12/2009	N	1	12	CC	3
☐	Edit	MD-5001	F	06/10/1952	HYST	01/12/2009	Y	2	3	CC	2
Old data		MD-5001	F	06/10/1952	HYST	01/12/2009	Y	2	3	CC	1

Update Delete Back

Importing

Multiple Records: This tab lists all procedure records that already exist in the NHSN database. In this tab, you must either select the existing record you wish to update (record will move to the Updates tab), or insert as a new record (record will move to Inserts tab).

Multiple Records

Delete		procid	patid	gender	dob	proccode	procdate	outpatient	procdurationhr	procdurationmin	swclass	asa	endosco
☐	Edit	○ Insert as new	1234928	F	04/02/1959	KPRO	10/09/2008	N	3	14	C	2	N
Existing data		○ 2674292	1234928	F	04/02/1959	KPRO	10/09/2008	N	3	14	C	2	N
☐	Edit	Insert not allowed	1234644	F	05/03/1949	KPRO	09/12/2008	N	1	26	C	2	N
Existing data		○ 2674269	1234644	F	05/03/1949	KPRO	09/12/2008	N	1	26	C	2	N
Existing data		○ 2674270	1234644	F	05/03/1949	KPRO	09/12/2008	N	1	26	C	2	N

Importing

Inserts

Delete		patid	gender	dob	proccode	procdate	outpatient	procdurationhr	procdurationmin	swclass	asa	endoscope	surgeon
☐	Edit	MD-5000	M	02/15/1944	COLO	01/12/2009	N	1	12	CC	3	N	
☐	Edit	MD-5001	F	06/10/1952	HYST	01/12/2009	Y	2	3	CC	1	N	
☐	Edit	MD-5002	F	03/25/1962	KPRO	01/12/2009	Y	1	25	C	1	N	
☐	Edit	MD-5002	F	03/25/1962	KPRO	01/12/2009	Y	1	25	C	1	N	
☐	Edit	MD-5003	M	07/11/1946	COLO	01/12/2009	N	1	34	CC	2	N	
☐	Edit	MD-5004	F	09/02/1976	CSEC	01/13/2009	N		35	C	1	N	
☐	Edit	MD-5005	F	04/29/1974	CSEC	01/13/2009	N		53	C	1	N	
☐	Edit	MD-5006	F	08/24/1982	CSEC	01/14/2009	N		44	C	1	N	
☐	Edit	MD-5008	M	10/17/1963	FUSN	01/22/2009	N	2	12	C	1	N	
☐	Edit	MD-5009	F	01/22/1960	CRAN	01/25/2009	N	3	36	C	2	N	

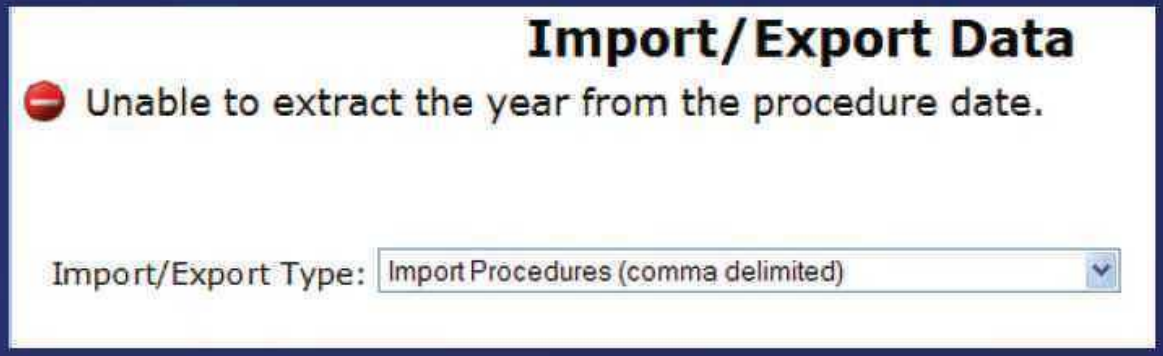
Update | Delete | Back

Once all desired edits and deletions have been made, you should have only the Inserts and/or Updates tab(s). Click "Update". When all records have been imported, you will see a message confirming the data file has been successfully imported.

Troubleshooting

"Unable to extract the year from the procedure date".

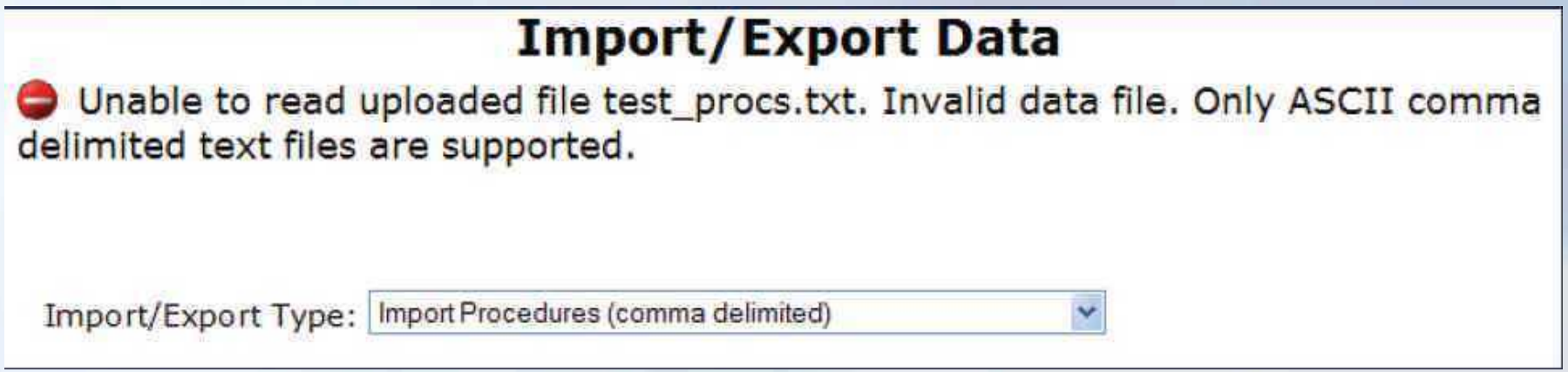
- Make sure there are no extra or missing columns. This would cause all of the data to shift one column - which means NHSN would see an invalid value for procedure date.
- Be sure that there is no header row or empty row in the import file.
- Check all of the procedure dates to make sure they are in mm/dd/yyyy format. If only one procedure date is missing a / or includes a special character, it will throw off the entire import file.



Troubleshooting

"Unable to read uploaded file…"

- Can be caused by invalid NHSN operative procedure code(s)
- Can be caused by trailing, special characters



Troubleshooting

"Unable to import data"

- Can be caused by missing patient information, such as DOB or gender.

Troubleshooting

Make sure the patient IDs are correct!

- If patient IDs have leading zeros, make sure these leading zeros are captured upon import
- May need to change format of this column to "text", as opposed to "general" or "number"
- When entering subsequent SSIs, patient ID must match exactly

00-11-22-33 ≠ 00112233

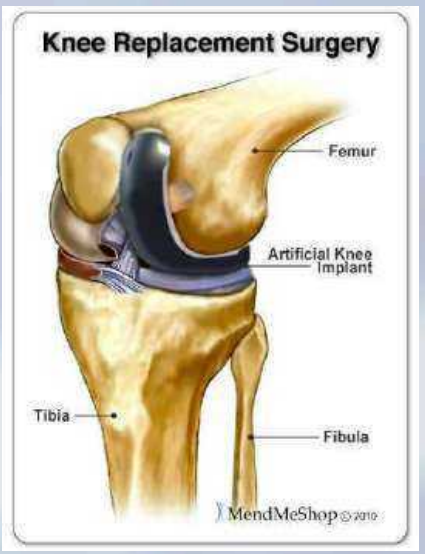
00112233 ≠ 112233

MR112233 ≠ 112233

Case Studies

Case 1

- A patient had bilateral knee prosthesis (KPRO) implanted during a single trip to the OR
  - Left knee incision to closure time 1 hr 27 min
  - Right knee incision to closure time 1 hr 30 min
  - Combined time 2 hrs 57 min



Case 1

- **Which statement is true?**
  - A. **One KPRO procedure should be reported to NHSN with a combined time of 2 hrs 57 min.**
  - B. **Two separate KPRO procedures should be reported to NHSN, each with a duration of 2 hrs 57 min.**
  - C. **Two separate KPRO procedures should be reported to NHSN; Left KPRO with a duration of 1 hr 27 min and Right KPRO with a duration of 1 hr 30 min.**

Case 1 - Correct Answer

- **Which statement is true?**
  - A. **One KPRO procedure should be reported to NHSN with a combined time of 2 hrs 57 min.**
  - B. **Two separate KPRO procedures should be reported to NHSN, each with a duration of 2 hrs 57 min.**
  - C. **Two separate KPRO procedures should be reported to NHSN; Left KPRO with a duration of 1 hr 27 min and Right KPRO with a duration of 1 hr 30 min.**

Case 2

- 45 year-old male with a colon resection (COLO) on 6/18
- 6/22:
  - At follow-up appointment, patient's abdominal incision has purulent drainage and erythemia with induration: incision is intact
  - Wound culture – *Enterobacter* spp and *E. coli*
  - Patient started on antibiotics

Case 2

- **What should be reported to NHSN?**

  A. **Nothing. The surgeon did not open the wound, so the criteria are not met.**
  B. **It is an SSI, but not an HAI**
  C. **SSI – SIP**
  D. **SSI - DIP**

Case 2 – Correct Answer

- **What should be reported to NHSN?**

A. **Nothing. The surgeon did not open the wound, so the criteria are not met.**
B. **It is an SSI, but not an HAI**
C. **SSI – SIP**
D. **SSI - DIP**

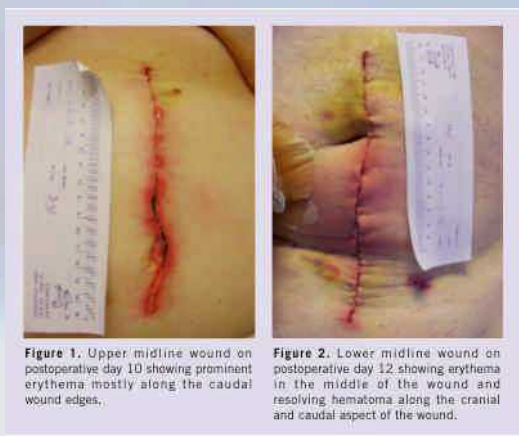


Figure 1. Upper midline wound on postoperative day 10 showing prominent erythema mostly along the caudal wound edges.

Figure 2. Lower midline wound on postoperative day 12 showing erythema in the middle of the wound and resolving hematoma along the cranial and caudal aspect of the wound.

Case 3

- Patient is admitted to the hospital on 4/12 for elective surgery and an active MRSA screening test is positive.
- On that same day (4/12) patient undergoes a small bowel resection.
- Post-op course unremarkable, patient discharged on 4/16
- On 4/29, patient is readmitted with a red, angry wound which the surgeon opens into the fascial layers and cultures
- On 5/1, culture results are positive for MRSA

Case 3

- Is this an HAI?
  - Yes –with a date of onset_____
  - No

- If yes, what type of infection should be reported
  - A. SIP
  - B. SIS
  - C. DIP
  - D. DIS
  - E. Organ/Space

Case 3 –Correct Answer

- Is this an HAI?
  - Yes – date of onset 4/29
  - No

- If yes, what type of infection should be reported
  - A. SIP
  - B. SIS
  - C. DIP
  - D. DIS
  - E. Organ/Space

Case 4

- **Which of the following does not meet the criteria for superficial incisional SSI if identified within 30 days after the procedure?**
  - A. **Physician documents "superficial wound infection"**
  - B. **Physician documents "cellulitis"**
  - C. **Purulent drainage noted from upper aspect of incision**
  - D. **MRSA grows from an aseptically obtained swab of the incision**

Case 4 – Correct Answer

- **Which of the following does not meet the criteria for superficial incisional SSI if identified within 30 days after the procedure?**
  - A. **Physician documents "superficial wound infection"**
  - B. **Physician documents "cellulitis"**
  - C. **Purulent drainage noted from upper aspect of incision**
  - D. **MRSA grows from an aseptically obtained swab of the incision**

Case 5

- Patient has a total knee replacement (KPRO) performed on 3/17 at Hospital A
- Discharged from Hospital A on 3/19
- Admitted to Hospital B on 3/25 with purulent drainage from a superficial incision
- Upon admission pt meets the NHSN definition of SIP

Case 5

- **Which hospital should report this SSI in NHSN?**
  - **Hospital A**
  - **Hospital B**

- **What if the SSI became apparent on 4/30?**

Case 5 – Correct Answer

- **Which hospital should report this SSI in NHSN?**
  - **Hospital A**
  - **Hospital B**

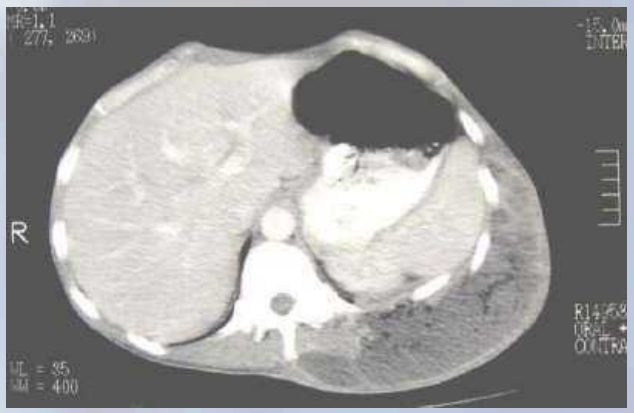
- **What if the SSI became apparent on 4/30?**
  - **Not reported due to > 30 days**

Case 6

- A 66 year old woman is admitted on 9/10 having recently noticed blood in her stool. Diagnostic tests reveal colon cancer.
- 9/11: Hemicolectomy was performed
- 9/13 P: Temp up to 38.7^{0}C, abdominal pain present. Ultrasound shows an abdominal wall abscess.
- 9/14: I&D completed, culture sent, and antibiotics started (final culture – *E. coli*).

Case 6

- Is this case an HAI?
  - Yes
  - No
- If so, what type?



Case 6 – Correct Answer

- Is this case an HAI?
  - Yes
  - No
- If so, what type?
  - Organ space (SSI-IAB)

Case 6

- Let's change the scenario and say at the time of the I&D, it was discovered that the patient had an anastomotic leak causing the abscess.

- Does this change your determination of an SSI-IAB?

Case 6 – correct answer

- Let's change the scenario and say at the time of the I&D, it was discovered that the patient had an anastomotic leak causing the abscess.

- Does this change your determination of an SSI-IAB?
  - No, still an organ space SSI-IAB

Case 7

- 75 year old patient admitted for bowel obstruction on 5/15 and taken to OR for a COLO and SB procedure. These two procedures are performed through the same incision.
- Which procedures (denominator) are entered into NHSN?
  - COLO
  - SB
  - Both
  - Depends on what procedures are on my Monthly Reporting Plan

Case 7 – Correct Answer

- 75 year old patient admitted for bowel obstruction on 5/15 and taken to OR for a COLO and SB procedure. These two procedures are performed through the same incision.
- Which procedures (denominator) are entered into NHSN?
  - COLO
  - SB
  - Both
  - Depends on what procedures are on my Monthly Reporting Plan

Case 7 Continued

- **If you report both procedures (completed through same incision), how are the durations for the individual procedures determined?**
  - A. **Split the total time in half and report half for each procedure.**
  - B. **Use the same full incision to closure time for both.**
  - C. **Guess and enter separate times for each, does not matter as long as you do not exceed total time.**

Case 7 - Answer

- **If you report both procedures (completed through same incision), how are the durations for the individual procedures determined?**
  - A. **Split the total time in half and report half for each procedure.**
  - B. **Use the same full incision to closure time for both.**
  - C. **Guess and enter separate times for each, does not matter as long as you do not exceed total time.**

Case 7 Continued

- You reported both procedures as denominators in NHSN (both part of monthly plan).
- 5/19 the patient spikes a temp of 38.2^{0}C, has abdominal pain and emesis. Ultrasound shows a fluid collection in the abdominal cavity and a needle aspiration for culture was completed.
- 5/22: Culture positive for *E. faecium*

Case 7 continued

- Is this an HAI?
  - Yes
  - No
- If so, what type?
- Which procedure is the SSI attributed to?
  - COLO
  - SB

Case 7 Answer

- Is this an HAI?
  - Yes
  - No
- If so, what type?
  - Organ space SSI-IAB
- Which procedure is the SSI attributed to?
  - COLO
  - SB is priority (table 3 chapter 9)

Case #8

- A female patient underwent a KPRO on December 22, 2010. She returned to her surgeon on January 31, 2011 with purulent drainage from the superficial incision, which had started 2 days prior.

- How should this infection be reported?
  - SSI – SIP
  - SSI – DIP
  - Not reported

Case #8

- A female patient underwent a KPRO on December 22, 2010. She returned to her surgeon on January 31, 2011 with purulent drainage from the superficial incision, which had started 2 days prior.

- How should this infection be reported?
  - SSI – SIP
  - SSI – DIP
  - Not reported – greater than 30 days

Case # 9

- 1/22: patient had a laparoscopic-assisted abdominal hysterectomy
- 2/1: abdominal pain with purulent drainage in 2 of 3 trochar sites: Temp 38.4
- 2/3: Surgeon opens draining sites and notes purulent material at the facial layer; cultures obtained and sent.
- 2/5: Cultures positive for ***Pseudomonas aeruginosa***

Case 9 continued

- Is this an SSI?
  - Yes
  - No
- If yes, what type and how many SSIs should be reported?

Case 9 continued

- Is this an SSI?
  - Yes
  - No
- If yes, what type and how many SSIs should be reported?
  - DIP and only one event reported

CAUTI

Key Terms

- **CAUTI - A UTI in a patient who had an indwelling urinary catheter in place at the time of or within 48 hrs prior to infection onset.**
  - **Location – CAUTI is attributed to the in-patient location at the time of urine collection or symptom onset, which ever comes first**
  - **Exception: If CAUTI develops within 48 hrs of transfer, then the infection is attributed to the previous transferring unit.**

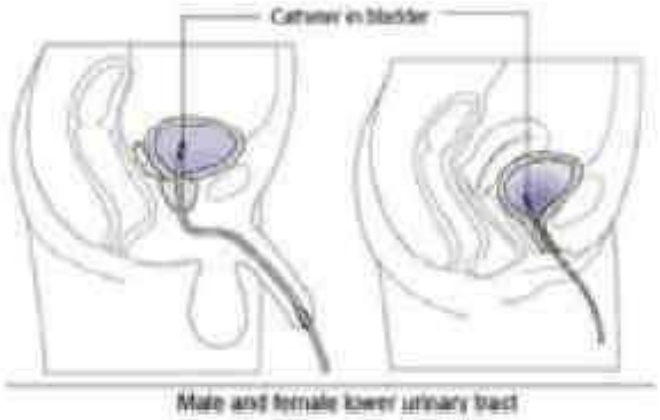
Key Terms

- There are several types of UTIs in NHSN
  - CAUTI – Catheter Associated UTI
    - SUTI – Symptomatic UTI
    - ABUTI – Asymptomatic Bacteremic UTI
  - OUTI – Other UTI
    - This is a UTI not associated with a catheter (you do not have to report these to NHSN for CMS)

Other Urinary Tract Infection (OUTI) (kidney, ureter, bladder, urethra, or tissue surrounding the retroperineal or perinephric space)

CAUTI Surveillance

Definition: CAUTI



- A drainage tube that is inserted into the urinary bladder through the urethra, is left in place, and is connected to a closed collection system
  - Also called a Foley catheter
  - Does not include straight in and out catheters or urinary catheters that are not placed in the urethra (ex. suprapubic catheter).

CAUTI Surveillance

CDC

DEPARTMENT OF HEALTH

SUTI Criteria

- SUTI (Symptomatic UTI)

Patient of any age
- Criterion 1a
- Criterion 1b
- Criterion 2a
- Criterion 2b

Patient ≤ 1 year of age
- Criterion 3
- Criterion 4

10^5 CFU/ml in urine*

10^{3-5} CFU/ml in urine*

*Urine culture must have no more than 2 microorganism species.

CAUTI Surveillance

SUTI Criteria

- SUTI (Symptomatic UTI)

Patient of any age
- Criterion 1a
- Criterion 1b
- [redacted]
- Criterion 2b

Patient ≤ 1 year of age
- Criterion 3
- Criterion 4

Had catheters in 48 hours prior to specimen collection

DIDN'T have catheters in 48 hours prior to specimen collection

With or without catheters in 48 hours prior to specimen

*Urine culture must have no more than 2 microorganism species.

CAUTI Surveillance

Table 1: Urinary Tract Infection Criteria

Criterion	Urinary Tract Infection (UTI)
	Symptomatic Urinary Tract Infection (SUTI) Must meet at least 1 of the following criteria
1a	Patient had an indwelling urinary catheter in place at the time of specimen collection *and* at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C), suprapubic tenderness, or costovertebral angle pain or tenderness *and* a positive urine culture of $\geq 10^5$ colony-forming units (CFU)/ml with no more than 2 species of microorganisms. ----------OR---------- Patient had indwelling urinary catheter removed within the 48 hours prior to specimen collection *and* at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness *and* a positive urine culture of $\geq 10^5$ colony-forming units (CFU)/ml with no more than 2 species of microorganisms.

CAUTI Surveillance

1b	Patient did not have an indwelling urinary catheter in place at the time of specimen collection nor within 48 hours prior to specimen collection *and* has at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C) in a patient that is ≤65 years of age, urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness *and* a positive urine culture of $\geq 10^5$ CFU/ml with no more than 2 species of microorganisms.

2a	Patient had an indwelling urinary catheter in place at the time of specimen collection *and* at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C), suprapubic tenderness, or costovertebral angle pain or tenderness *and* a positive urinalysis demonstrated by at least 1 of the following findings: a. positive dipstick for leukocyte esterase and/or nitrite b. pyuria (urine specimen with ≥10 white blood cells [WBC]/mm^3 of unspun urine or ≥3 WBC/high power field of spun urine) c. microorganisms seen on Gram stain of unspun urine *and* a positive urine culture of ≥10^3 and <10^5 CFU/ml with no more than 2 species of microorganisms. ----------OR---------- Patient had indwelling urinary catheter removed within the 48 hours prior to specimen collection *and* at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness *and* a positive urinalysis demonstrated by at least 1 of the following findings: a. positive dipstick for leukocyte esterase and/or nitrite b. pyuria (urine specimen with ≥10 white blood cells [WBC]/mm^3 of unspun urine or ≥3 WBC/high power field of spun urine) c. microorganisms seen on Gram stain of unspun urine *and* a positive urine culture of ≥10^3 and <10^5 CFU/ml with no more than 2 species of microorganisms.

CAUTI Surveillance

2b	Patient did not have an indwelling urinary catheter in place at the time of specimen collection nor within 48 hours prior to specimen collection *and* has at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C) in a patient that is ≤65 years of age, urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness *and* a positive urinalysis demonstrated by at least 1 of the following findings: a. positive dipstick for leukocyte esterase and/or nitrite b. pyuria (urine specimen with ≥10 WBC/mm^3 of unspun urine or ≥3 WBC/high power field of spun urine) c. microorganisms seen on Gram stain of unspun urine *and* a positive urine culture of ≥10^3 and <10^5 CFU/ml with no more than 2 species of microorganisms.

CAUTI Surveillance

3	Patient ≤1 year of age with or without an indwelling urinary catheter has at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C core), hypothermia (<36°C core), apnea, bradycardia, dysuria, lethargy, or vomiting
	and a positive urine culture of ≥10^5 CFU/ml with no more than 2 species of microorganisms.

CAUTI Surveillance

4	Patient ≤1 year of age with or without an indwelling urinary catheter has at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C core), hypothermia (<36°C core), apnea, bradycardia, dysuria, lethargy, or vomiting *and* a positive urinalysis demonstrated by at least one of the following findings: a. positive dipstick for leukocyte esterase and/or nitrite b. pyuria (urine specimen with ≥10 WBC/mm^3 of unspun urine or ≥3 WBC/high power field of spun urine) c. microorganisms seen on Gram's stain of unspun urine *and* a positive urine culture of between ≥10^3 and <10^5 CFU/ml with no more than two species of microorganisms.

CAUTI Surveillance

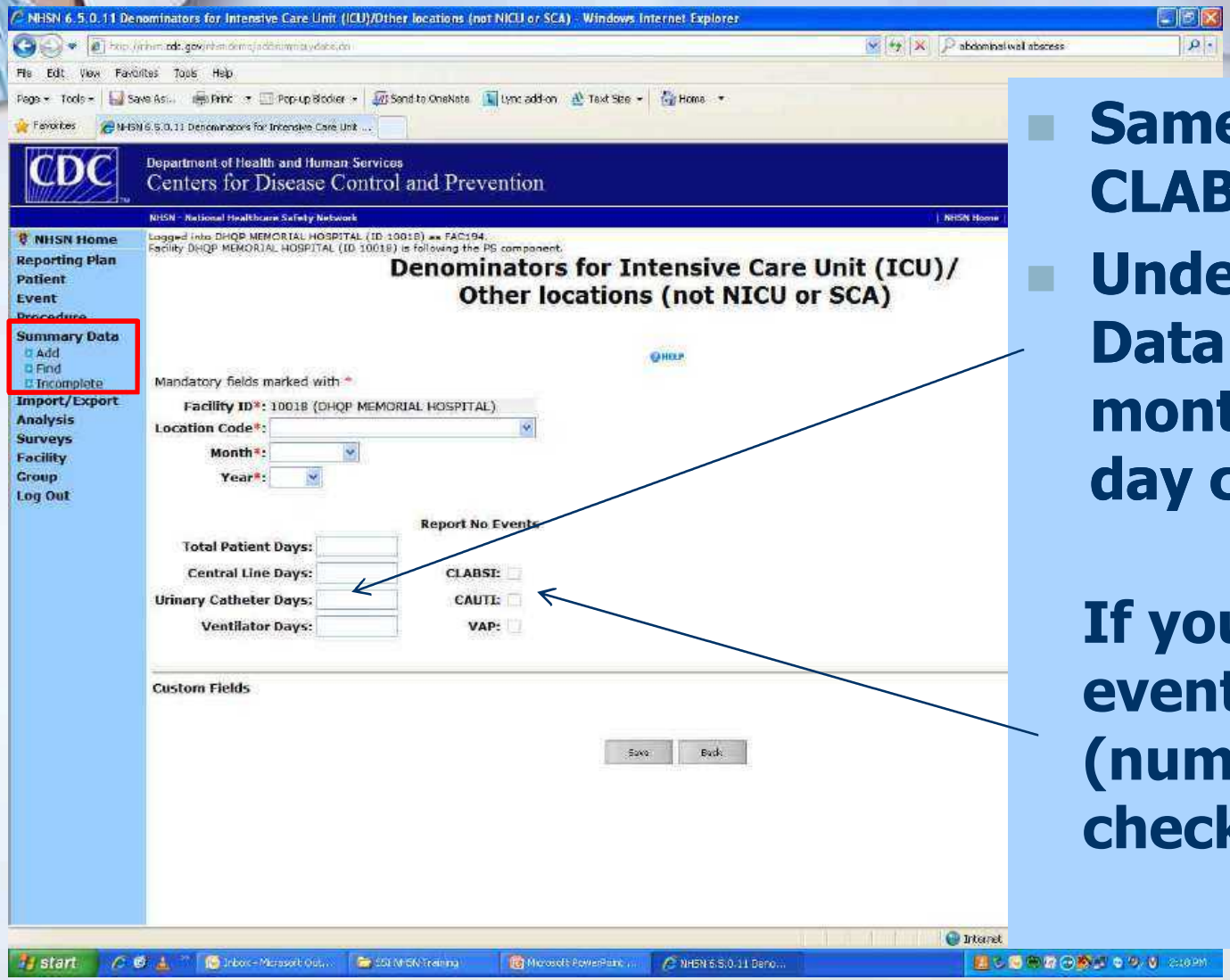
Criterion	Asymptomatic Bacteremic Urinary Tract Infection (ABUTI)
	Patient with or without an indwelling urinary catheter has no signs or symptoms (i.e., for any age patient, no fever (>38°C), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness, OR for a patient ≤1 year of age, no fever (>38°C core), hypothermia (<36°C core), apnea, bradycardia, dysuria, lethargy, or vomiting) *and* a positive urine culture of >10^5 CFU/ml with no more than 2 species of uropathogen microorganisms* *and* a positive blood culture with at least 1 matching uropathogen microorganism to the urine culture, or at least 2 matching blood cultures drawn on separate occasions if the matching pathogen is a common skin contaminant. * Uropathogen microorganisms are: Gram-negative bacilli, *Staphylococcus* spp., yeasts, beta-hemolytic *Streptococcus* spp., *Enterococcus* spp., *G. vaginalis*, *Aerococcus urinae*,and *Corynebacterium* (urease positive).

January 2012 release: indwelling urinary catheter in-place within 48 hrs prior to specimen collection will be added.

CAUTI Comments

Comments	• Urinary catheter tips should not be cultured and are not acceptable for the diagnosis of a urinary tract infection. • Urine cultures must be obtained using appropriate technique, such as clean catch collection or catheterization. Specimens from indwelling catheters should be aspirated through the disinfected sampling ports. • In infants, urine cultures should be obtained by bladder catheterization or suprapubic aspiration; positive urine cultures from bag specimens are unreliable and should be confirmed by specimens aseptically obtained by catheterization or suprapubic aspiration.

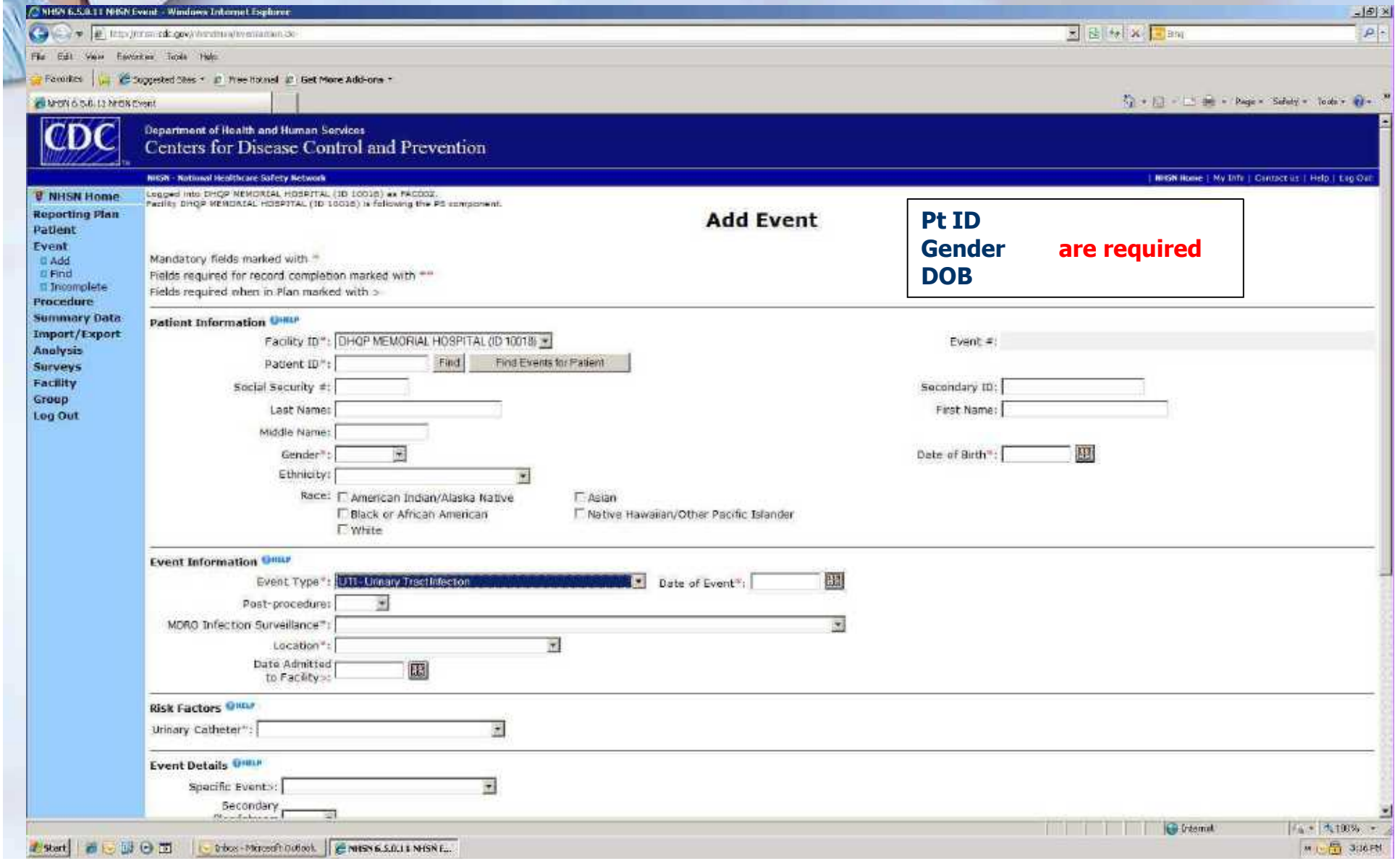
Entering Denominator



- Same process as CLABSI
- Under Summary Data tab add monthly device day count

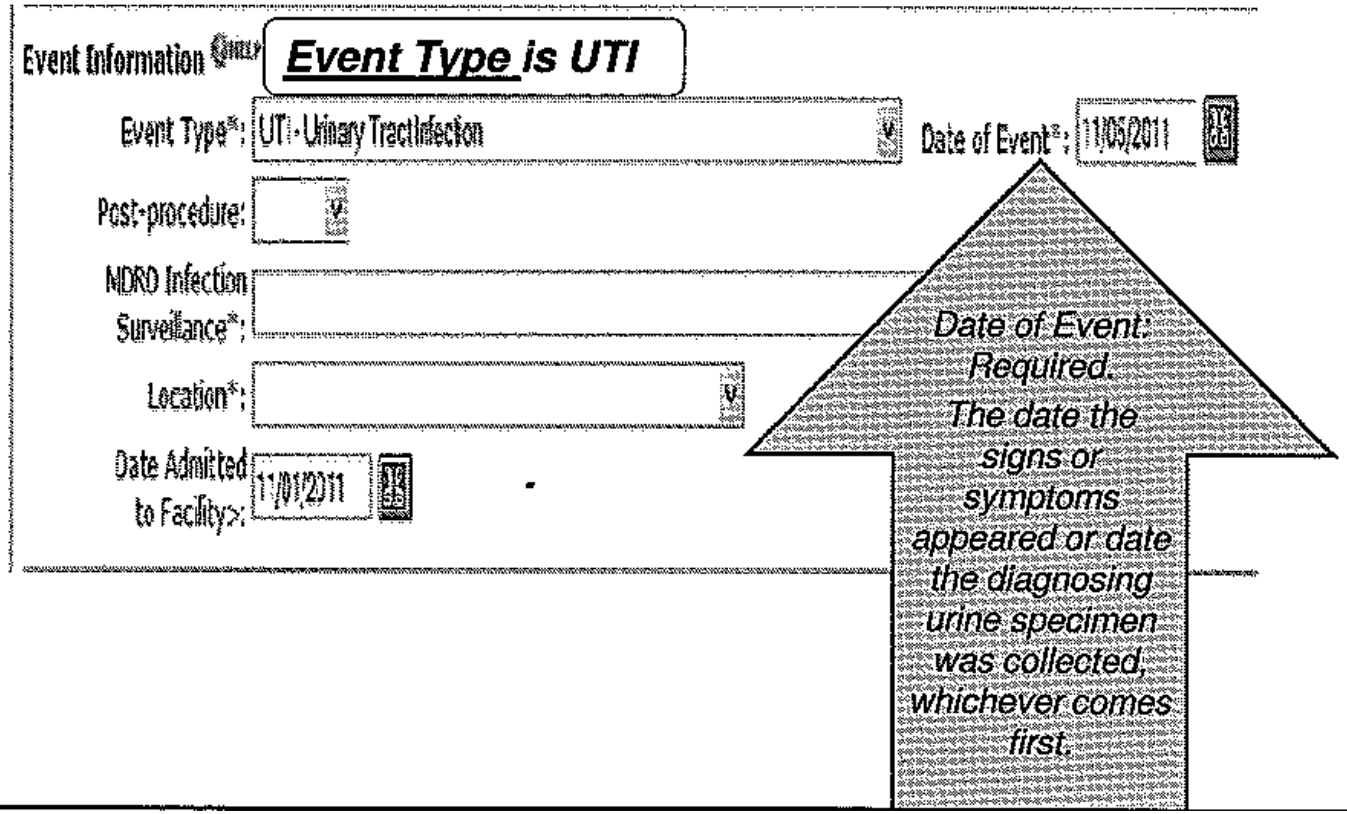
If you have no events (numerators) check this box

Entering Numerator



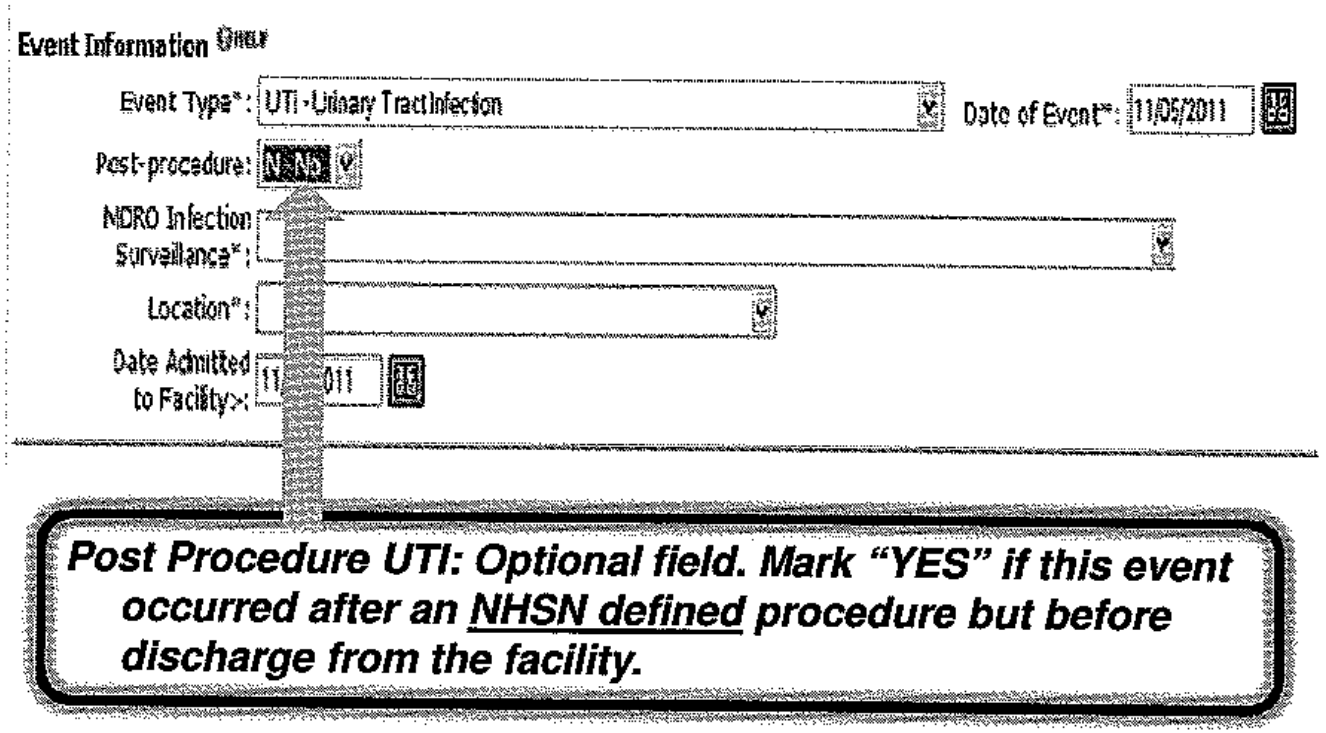
Entering Numerator

Event Information
CAUTI



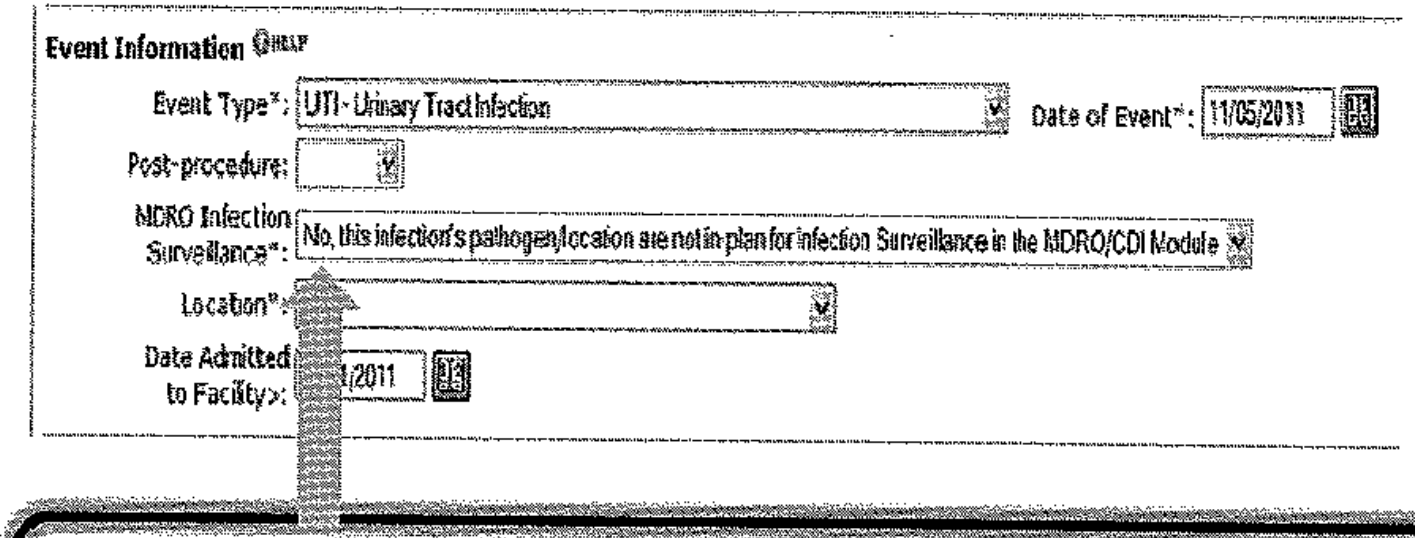
Entering Numerator

Event Information
CAUTI



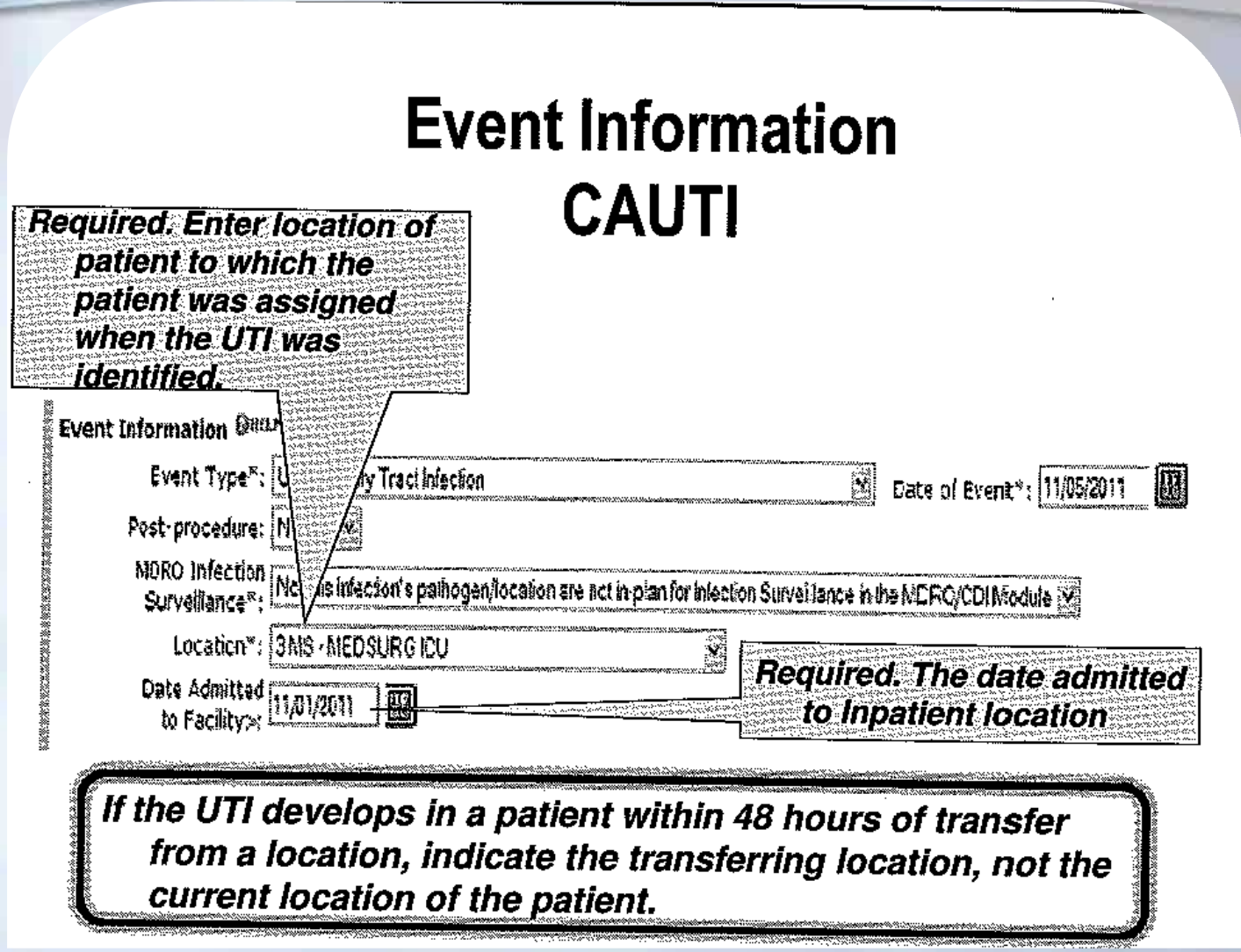
Entering Numerator

Event Information
CAUTI



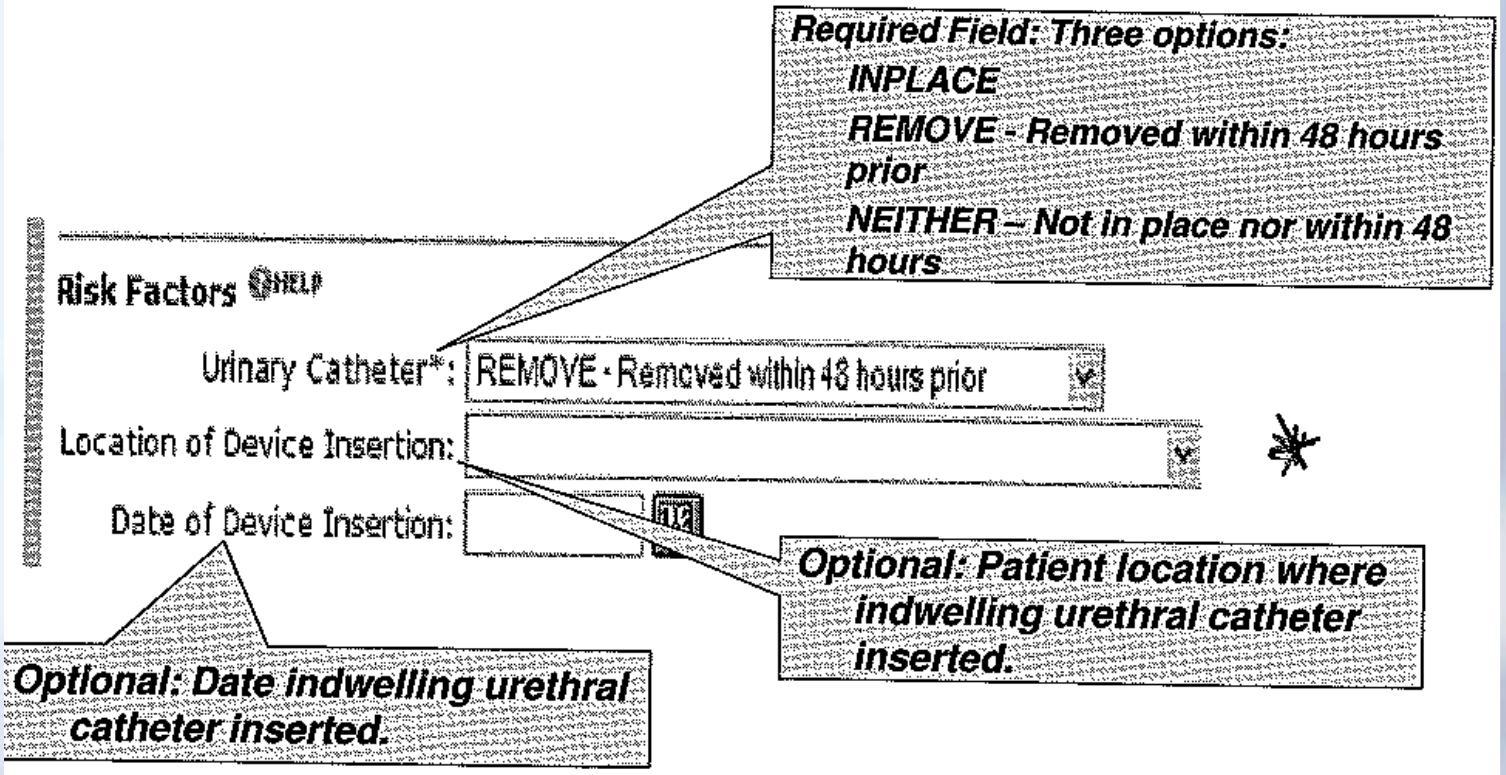
MDRO Infection: Enter "YES" <u>only</u> if the pathogen is being followed for Infection Surveillance in the MDRO/CDI Module in that location as part of your Monthly Reporting Plan.

Entering Numerator



Entering Numerator

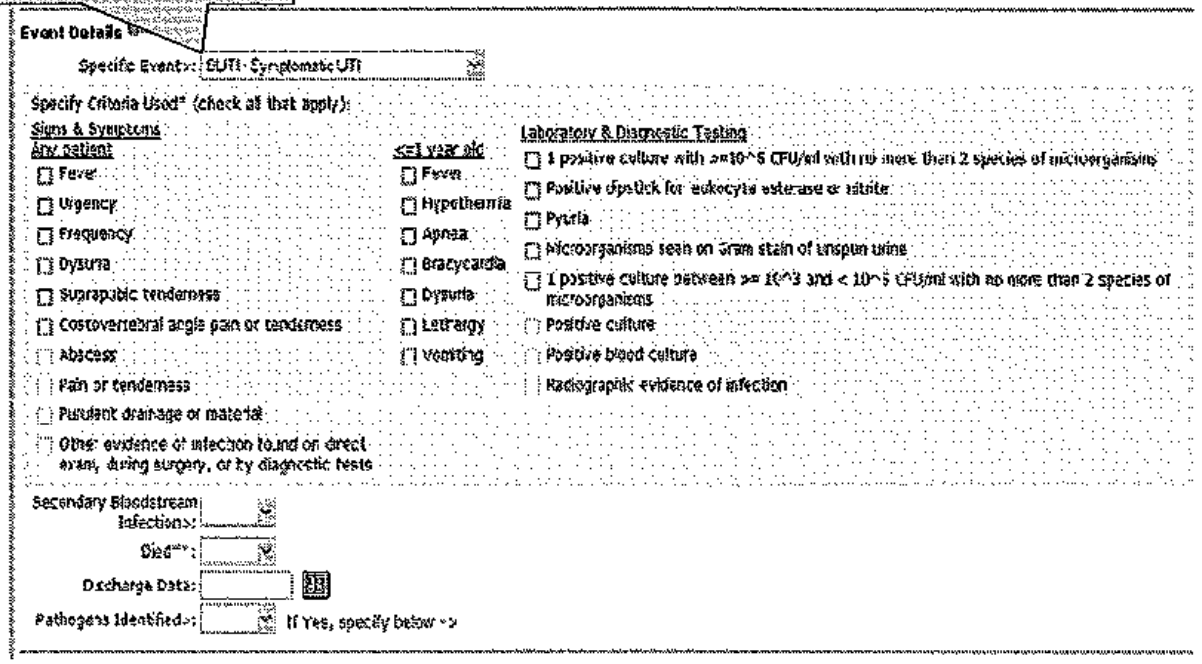
Risk Factors
CAUTI



Entering Numerator

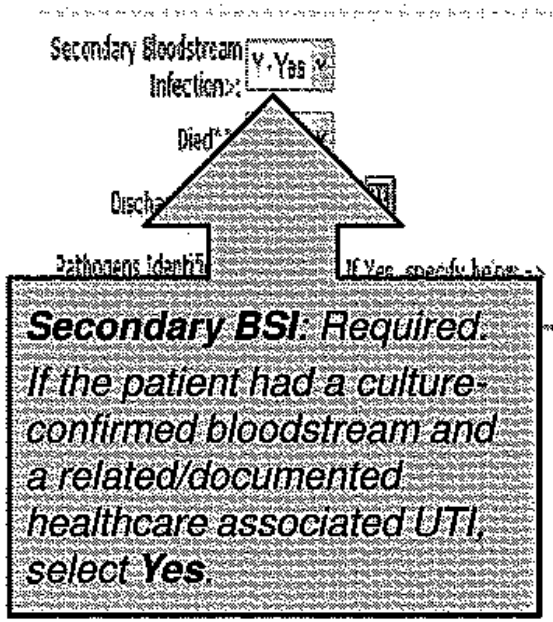
Event Details: Specific Event

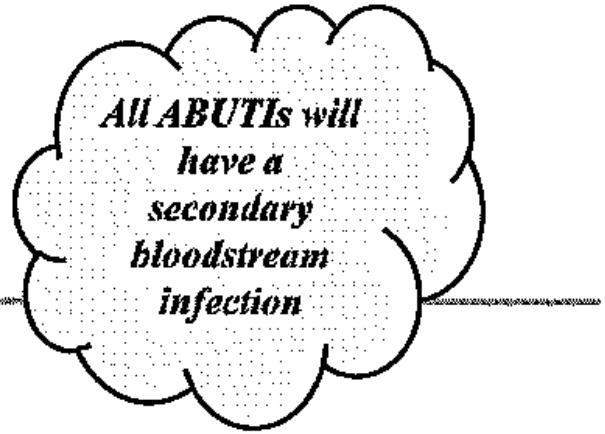
Available selections based on Event Type



Entering Numerator

Event Details: Secondary BSI





Entering Numerator

Secondary BSI

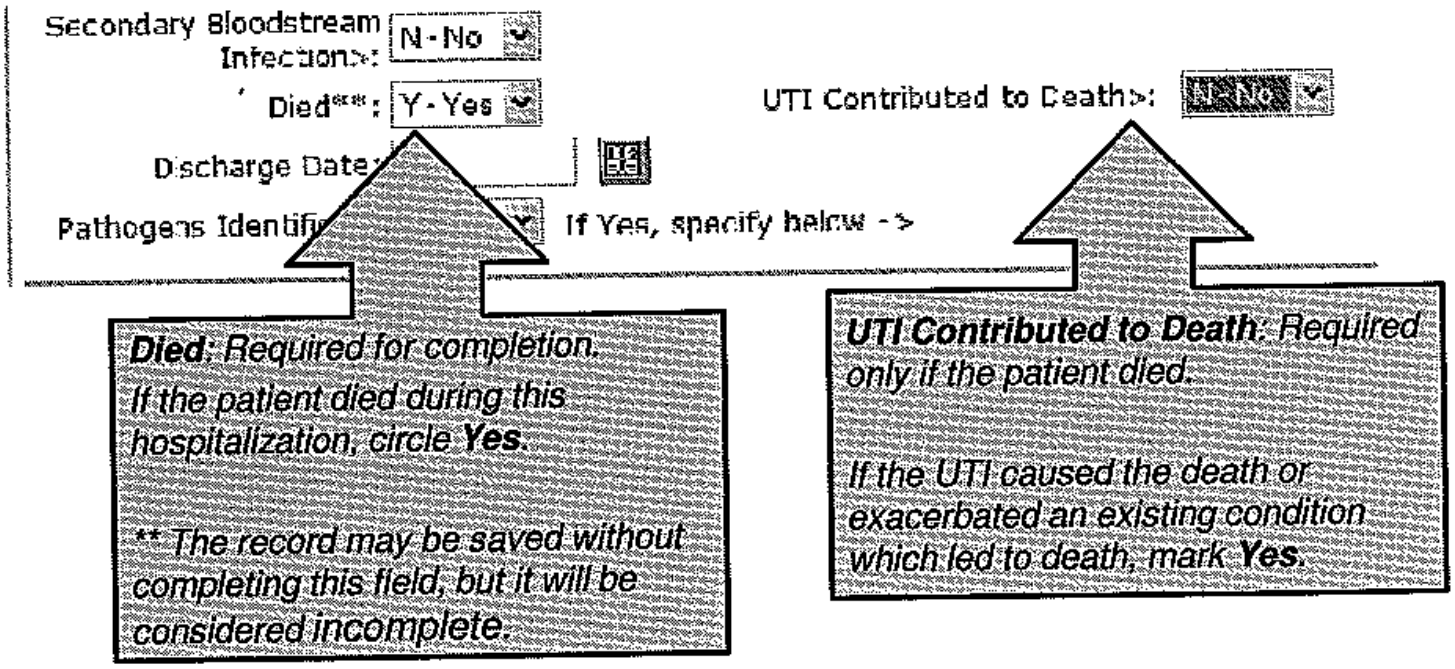
For UTI, at least one organism from the positive urine culture must match an organism in the blood culture *(antibiograms of the isolates do not have to match).*

Example: Patient grows E. coli in her urine and in her blood. The CAUTI is reported with Secondary BSI = Yes and the pathogen is E. coli.

http://www.cdc.gov/nhsn/PDFs/SecondaryBSIGuide_06_11.pdf

Entering Numerator

Event Details



Electronic Collection of Summary Data (Denominator)

Electronic capture of summary data is acceptable (denominator – catheter days)

- **Following validation of the electronic method against the manual method**
  - **3 months concurrent data collection with both methods**
  - **Difference between the methods must be within +/- 5% of each other**

Numerator Data

http://nhsn.cdc.gov/nhsndemo

Usernames: FAC002-FAC102
Passwords: BAWIGL002-BAWIGL102

CAUTI

Case Studies

Case 1

- POD 3: 66 year old patient in the ICU with a Foley cath in-place; S/P exploratory laparotomy
- Pt noted to be febrile (38.9^{0}C) and complaining of diffuse abdominal pain
- WBC increased to 19,000; urine cloudy, foul smelling and U/A + nitrates and + leukocyte esterase. Urine culture 10,000 CFU/ml *E. coli*
- Addominal pain seemed localized to surgical area

Case 1

- Is this a UTI?
  - Yes
  - No
- If so, what type?
  - SUTI Criterion 1b
  - SUTI Criterion 2a
  - ABUTI

Case 1

- Is this a UTI?
  - Yes
  - No
- If so, what type?
  - SUTI Criterion 1b
  - SUTI Criterion 2a
  - ABUTI

Case 2

- 84 year old pt is hospitalized with GI bleed and Foley catheter inserted
- Day 3: pt still has indwelling catheter and no S&S if infection
- Day 9: pt becomes unresponsive and is intubated, Temp 38.0^{0}C; WBCs 15,000. Pan cultured and urine and blood both grow *Streptococcus pyogenes,* with urine culture >100,000 CFU/ml

Case 2

- Is this a UTI?
  - Yes
  - No, because blood seeded the urine
- If so, what type?
  - ABUTI
  - SUTI Criterion 1a with secondary BSI

Case 2

- Is this a UTI?
  - Yes
  - No, because blood seeded the urine
- If so, what type?
  - ABUTI
  - SUTI Criterion 1a with secondary BSI

Case 3

- 9/1: 73 y.o. pt in neuro ICU, admitted 7 days ago following CVA. On vent with central line and Foley catheter since admission. Pt reacts only to painful stimuli.
- 9/2: WBCs now 12,000 and temp 37.4^{0}C; urine cloudy and lungs clear.
- 9/3: WBC 15,800 and temp 37.6^{0}C; breath sounds course, sputum clear. Pan cultured. No suprapubic pain.
- 9/4: Blood and sputum cultures no growth; urine with 100,000 CFU/ml *E. faecium*

Case 3

- Does this pt have a UTI?
  - Yes
  - No
- If so, what type?
  - ABUTI
  - SUTI Criterion 1a
  - SUTI Criterion 1b

Case 3

- Does this pt have a UTI?
  - Yes
  - No, pt has no symptoms and BC negative
- If so, what type?
  - ABUTI
  - SUTI Criterion 1a
  - SUTI Criterion 1b

Case 3 continued

- What if the pt's temp was 38.1^{0}C and also had bronch lavage specimen positive for *E. faecium?*

- Does the patient now have a UTI?
  - Yes – fever is nonspecific and may be due to more than one cause
  - No – the patient's fever is due to pneumonia

Case 3 continued

- What if the pt's temp was 38.1^{0}C and also had bronch lavage specimen positive for *E. faecium?*

- Does the patient now have a UTI?
  - Yes – fever is nonspecific and may be due to more than one cause
  - No – the patient's fever is due to pneumonia

Case 4

- 1/25: 69 year old women admitted with right lower leg cellulitis. Medical history of diabetes and COPD. Antibiotics started (peripheral I.V.). Glucose elevated at 545 and WBC 11,500.
- 1/26: Glucose 480 and WBC 9,200
- 1/28: Pt with nausea, right leg less red, still slightly warm to touch. WBC 10,700 and temp up to 38.2^{0}C. Due to fever, urine culture sent (I&O cath). Pt denies frequency, urgency, dysuria or suprapubic or costovertebral pain.
- 1/30: Urine culture results >100,000 CFUs

Case 4

- Does this patient have a UTI?
  - Yes
  - No

- If yes, what type?
  - SUTI 1b
  - SUTI 1a
  - SUTI 2b
  - SUTI 2a

Case 4

- Does this patient have a UTI?
  - Yes
  - No – Due to patient's age and lack of Foley, fever cannot be used as a symptom

- If yes, what type?
  - SUTI 1b
  - SUTI 1a
  - SUTI 2b
  - SUTI 2a

Case 5

- 50 yo patient with end stage pancreatic cancer admitted for hospice care. Foley catheter, IV, and nasal cannula inserted upon admission.
- Day 4 patient is febrile to 38.0 c and has suprapubic tenderness; urine culture sent.
- Day 5 difficulty breathing; CXR shows infiltrate L lung base
- Day 6 urine culture results = 10^5 CFU/ml E coli
- Day 7 WBCs 3,400; patchy infiltrates both lungs, rales noted LLL
- Day 11 patient expires

Case 5 continued

- Does this patient have a UTI?
  - Yes
  - No, patient has pneumonia
- If so, What type?
  - ABUTI
  - SUTI criterion 1a
  - SUTI criterion 2a

Case 5 continued

- Does this patient have a UTI?
  - Yes
  - No
- If so, What type?
  - ABUTI
  - SUTI criterion 1a
  - SUTI criterion 2a

Questions

- Thank You for your time

- Contact info:

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  andrea.flinchum@ky.gov

  nhsn@cdc.gov